EVALUATE THE EFFECTIVENESS OF DRUMSTICK LEAVES JUICE TO INCREASE THE HAEMOGLOBIN LEVEL AMONG ADOLESCENT GIRLS WITH ANEMIA IN A SELECTED HOMES AT MADURAI DISTRICT.

BY

PRIYANKA.M

A dissertation submitted to the Tamil Nadu Dr. M. G. R Medical University, Chennai.

In partial fulfilment of the requirements for the degree of Master of Science in

Community Health Nursing

UNDER THE GUIDANCE OF

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October – 2015

CERTIFICATE

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ABSTRACT

A study to evaluate the effectiveness of drumstick leaves juice to increase the haemoglobin level among adolescent girls with anemia in a selected homes at Madurai district was done by Ms. M. Priyanka as a partial fulfillment of the requirement for the degree of Master of Science in Nursing to the TamilNadu Dr. M.G.R. Medical University, Chennai during the year 2013-2015.

The objectives of the study

1. To assess the prevalence of anemia among adolescent girls.
2. To determine the effectiveness of drumstick leaves juice on levels of haemoglobin among adolescent girls with anemia.
3. To find the association between, the post test level of haemoglobin among adolescent girls with anemia with selected demographic variables
4. To implement the need based awareness programme on anemia among adolescent girls in selected home at Madurai district.

Research hypotheses were formulated to find the effectiveness of the drumstick leaves juice. The review of literature was done and organized under the following headings. Review related to anemia, studies related to anemia, studies related to drumstick leaves in improving haemoglobin level. The conceptual framework was based on Widenbachs helping art theory (1964). Quasi experimental one group pre test post test design was adopted for this study. The sample size was 40. The tool was validated by experts and found to be valid for this study. The reliability was established through the test-retest method. The tool was administered to the adolescent girls, after a gap of 15 days the retest was given. The Karl Pearson's coefficient of correlation was computed and the reliability was found to be 0.96.

The tool was reliable for this study. The pilot study was conducted in the home at LPNI girls higher secondary school, K Pudur, Madurai, with 10 adolescent girls. The main study conducted among the adolescent girls in the home at CSI girls higher secondary school, Pasumalai, Madurai. The samples were selected by using non probability purposive sampling method. The pre estimation level of haemoglobin was done and the drumstick leaves juice was administered for 15 days and the post estimation level of haemoglobin was done. Along with this, a well structured questionnaire was applied.

The collected data were tabulated, analyzed and interpreted by using descriptive and inferential statistics and the finding shows that , in the prevalence of anemia all the adolescent girls were having from 2 to 18 signs and symptoms in that the major complaints is hair loss, fatigue and problems in concentration and thinking, in the level of haemoglobin 23 (57.5 %) had mild level of anemia and 17 (42.5 %) had moderate level of anemia in the pre-test and 24 (60 %) had mild level of anemia and 16 (40 %) had no anemia in the post-test.It shows that there is a difference between the pre and post level of haemoglobin. This shows that there is a significant difference between the mean score after the intervention .The obtained “t” 9.44 value was found to be extremely significant at the level of $p < 0.01$. It was observed that the administration of the drumstick leaves juice for an adolescent girls with anemia had a significant increase in post test estimation of haemoglobin.

There was no significant association between the level of haemoglobin with selected demographic variables like Age, educational status of Father, educational status of Mother, religion, type of family, no of siblings, monthly income of the family, source of information, menstrual history, dietary pattern and hygienic practices. So, the investigator feels that the level of haemoglobin is not constrained by any of the demographic variables and it was decrease due to lifestyle modification in a person in their life. The level of knowledge of an

adolescent girls on anemia before the need based awareness programme was 82 (100%) was inadequate.

The study concludes that along with intervention, importing sufficient knowledge to the adolescent girls on anemia will help them to maintain their health appropriately. So, the investigator planned to conduct the health awareness progamme in the home among the adolescent girls with appropriate av aids. A documentary film on anemia was taken by the investigator which includes definition, risk factors and causes, signs and symptoms, diagnostic evaluation, treatment, management, prevention and complication. This tool will take a part in the future health of the adolescent girls.

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CHAPTER I

INTRODUCTION

"Healthy adolescent girls of today are the healthy mothers of tomorrow"

God created a human as a man and women and in that, a girl is a most beautiful creation in this world; they are the blessed angels of almighty, who after filling their own home with colours of happiness. A girl can give a feel of innocence in the form of daughter, care in the form of sister, warmth in the form of friend, dedication in the form of wife and divinity in the form of mother likewise they took a major role in all stage of her development. In girls, adolescence is a stage which she entering into the opened world with lots of dreams and goals of achievement.

Adolescence is a journey from the world of the child to the world of the adult. It is a time of physical and emotional change as the body matures. Adolescence is a critical transitional period that includes the biological changes of puberty and the need to negotiate key developmental task and it requires special attention and protection. The World Health Organization (WHO) defines adolescents as young people aged 10-19 years (SEARO Adolescent health and development 2014)

Health of today's youth is hope for tomorrow's world, adolescent nutrition is therefore important for supporting the physical growth of the body and for preventing future health problems. During this time, physical changes affect the body's nutritional needs, while changes in one's lifestyle may affect eating habits and food choices. Any nutritional deficiency experienced during this critical period of life can have an effect on the future health of the individual and their offspring. (Nutrition in adolescent girls, My Virtual Medical Centre)

Now a day the young adolescent faces many problems because of their life style modifications such as eating Junk foods, fast foods, snacking, skipping of the meal which is common in urban adolescent girls. Some are malnourished due to lack of knowledge about dietary iron, poor socio economic status, low income family which is common in rural areas.

A major problem of an adolescent girl is a menstrual period. During this period a girl used to lose 45 ml of blood (i.e.) 22 mg of iron which leads most of the girls to get affect with anemia.

Tamil Nadu shows a result that every year 1000 pregnant women were dying due to anemia and it was the main reason for the pre-term baby, new born death and abortion. (Dinamalar newspaper 13 July 2015)

Anemia is one of the most important health problems throughout the world among adolescent. In India anemia is a national nutritional problem and in Tamil Nadu, the prevalence of aaemia among adolescent is 53.7%. Data from National Family Health Survey-2 (NFHS 1998-1999) points out that the prevalence of anemia is higher among young women (< 25 years) as well as among older women (> 50 years). Later NFHS 3 (2005-2006) indicated most of the women (55%) were affected with anemia.

Dietary Reference Intakes (DRIs) developed by the National Health and Medical Research Council of Australia (NHMRC) provide current quantitative estimates of nutrient intakes to be used for planning and assessing diets for healthy people, including adolescents. The important nutrients that need to increase during adolescence include energy, protein, calcium, and iron.

Anemia results from a nutritional deficiency of iron, folate, vitamin B 12 and some other nutrients. Low intake of iron will also leads to stunting. Iron is one of the micronutrient.

It is used for formation of haemoglobin, oxygen transportation, brain development, regulation of body temperature and muscle activity. When the iron is decreased in human body, it is called as iron deficiency.

According to world health organization (WHO) the haemoglobin level should be 12 g/dl for adolescent girls. When the haemoglobin level less than 12 g/dl is considered as iron deficiency anemia. WHO/UNICEF/ UNU graded the haemoglobin level

- 10- 11.9 g/dl is considered as mild anemia,
- 7 g/dl to 9.9 g/dl is considered as moderate anemia and
- Less than 7 g/dl is considered as severe anemia.
- ≥ 12 g/ dl is considered as Non anemic

The decreased dietary iron intake, poor absorption, worm infestation, increased body demand, menstruation are the major causes of iron deficiency anemia among adolescent girls.

Iron deficiency is the most wide spread form of malnutrition in the world, affecting more than 2 million people (Stozfus, Preyfus, 2000). Iron deficiency is the most common cause of anemia in adolescent in the United States, and an adolescent girl is 10 times more likely to develop anemia than a boy. Among girls, however, menstruation increases the iron deficiency anemia throughout their adolescent and childbearing years. During adolescence, teenagers will acquire the knowledge and skills that will help them to become independent, successful young adults but, the iron deficiency anemia will affect this learning and development

Common foods known to inhibit iron absorption are tea, coffee, milk due to phytates, tannins and phosvitin in egg. However, a study from “The American Journal of Clinical Nutrition” indicates that calcium richly supplied through dairy products, has been shown to

inhibit iron absorption up to 50 per cent. Children, adolescents and women with iron deficiencies, therefore, should avoid consuming dairy products.

Iron and folic acid tablets supplementation is recommended to combat moderate and severe anemia. Periodic de-worming should be encouraged for once in every 6 months, maintaining hygienic practices like hand washing, wearing regular foot wear practices while going to toilet. Regular haemoglobin screening tests will identify the iron deficiency anemia in early stage. Education about avoiding the meal skipping , Jung foods and fast foods will prevent the iron deficiency anemia and encourage the intake of low cost iron rich foods such as drumstick leaves, dates, jaggary, ragi, green leaves, chickoo to the rural areas.

Among this drumstick leaves which is scientifically own as Moringa olifera is one of the green leafy vegetables which are rich and natural source of iron. Drum Stick leaves will cure almost 300 types of diseases. It has approximately 90 nutrients and 46 antioxidants. Drumstick Leaves are high in nutrition and medicinal properties. (Smart way to Health, 2013)

Drumstick leaves equal to 7 times Vitamin C in oranges, 4 times Vitamin A in carrots, 4 times Calcium in milk, 3 times Potassium in banana, 2 times Protein in yoghurt, 4 times Fiber of oats, 9 times Iron of spinach. Eating drumstick leaves curry, or taking juice regularly can cure anemia. Drumstick leaves with its high beta carotene content (19690 mcg/100g) along with vitamin C from lemon juice may have a positive impact in the mobilization of stored iron and increase haemoglobin levels of anemia. (Vira Junam, January 20, 2013)

As a part of preventing anemia, India is the first country to launch National Nutritional Anemia Prophylaxis Programme at 1970 and also included in 4^{th} five year plan. At 2013 the minister of health and family welfare, Mr. Gulam Nabi Azad and the honourable chief minister Mr.Siddaramaiah launched a Weekly Iron and Folic acid Supplementation Program (WIFS) for adolescents at Koramangala indoor stadium in Bangalore. It was

included in the national programme to reduce the prevalence and severity of anemia under the scheme of Chacha Nehru Sehat Yojana. (NCBI 2013)

In Tamil Nadu, the state health society invites the non-governmental organisation for implementation of Anemia Control Programme among pregnant women and adolescent girls using behaviour change communication strategy in 18 districts with the strategy of baseline survey, identification of problems, developing behaviour change communication strategy in lie with the outcome of the pilot programme implemented in five districts, implementation of behaviour change communication strategy, monitoring and evaluation of anemia and it was implemented.

The initial phase was built an around three essential interventions 1. Weekly Iron and Folic acid Supplementation providing 100 mg of elemental iron and 500 μg of folic acid for 52 weeks a year for prevention of nutritional anemia, 2. Bi- annual deworming prophylaxis (400 μg of albendazole) six months apart for the prevention of helminthic infestations, 3. Information, Counselling and support to adolescent girls on how to improve the diets and to minimise the potential undesirable effects. (National Rural Health Mission)

SIGNIFICANCE AND NEED FOR THE STUDY

Adolescent would be the best investment for future. There are about 1.2 billion adolescents, a fifth of the world's population (2009 estimates), and 243 million estimated number of adolescents in India. About one-quarter of India's population is adolescents and in that 17.2 % of adolescent were in Tamil Nadu and their numbers are increasing.

The prevalence of anemia among adolescents is 27% in developing countries, and 6% in developed countries. In world health report of World Health Organization (WHO) states that the world wide mortality rate of iron deficiency anemia is 60,404,000 in 2005. National

Family Health survey in 2006 showed that 56% of adolescent girls are anemic in India. The report shows that 2 billion people, over 30% of the world's population are anemic. (WHO 2014).

World health report of World Health Organization states that the mortality rate of iron deficiency anemia is 1,37,04,953 cases in India 2005.Anemia is estimated to contribute to more than 115,000 maternal deaths and 591,000 perinatal deaths globally per year and according to family health survey statistics one in every five maternal death is due to anemia.

India is one of the countries with very high prevalence of anemia in the world. Almost 58 per cent of pregnant women in India are anemic and it is estimated that anemia is the underlying cause for 20–40 per cent of maternal deaths in India. India contributes to about 80 per cent of the maternal deaths due to anemia in South Asia

A current scenario around 49 per cent of women between 15 and 49 years of age are anemic, says the District-Level Household Survey.Around 46 per cent of adolescent girls are anemic, while 56 per cent of pregnant women between 15 and 49 years of age are anemic. The United Nations Children's Fund (UNICEF), along with several other organisations, is trying to raise awareness levels.

The report says, the number of deaths due to anemia is 4894 and 1.5 deaths per 100000 population.(Deaths: Final data 2013). With an estimated 1.6 billion people globally suffering from anemia, several 100 million routinely manifest iron deficiency anemia. 40%-50% of the population in developing nations remain anemic at all ages with the exception of non-elderly men.(Nutrition articles and infographics 2014)

Job Zachariah, Chief of UNICEF for Tamil Nadu and Kerala, estimates that the State could lose around Rs.8,000 crore due to anemia because of loss of income of around Rs.5,000

per family per year due to reduced productivity and production. “Anemia leads to death in pregnant women, malnutrition, infection, and death of children and even reduces IQ and learning levels, which could lead to an increase in dropout levels”.(The Hindu July 11, 2015)

The study was conducted on Prevalence of iron deficiency anemia among adolescent girls in 16 districts of India in 2006. The survey showed that 90.1% of adolescent girls are having iron deficiency anemia. In this 60.1% of adolescent girls were exposed to moderate iron deficiency anemia and 7.1% of adolescent girls were exposed to severe iron deficiency anemia.

The prevalence of anemia has actually increased from NFHS-2 to NFHS-3. The percentage of children with any anemia increased from 74.3 per cent in NFHS-2 to 78.9 per cent in NFHS-3. In the period between the two surveys, there was an increase in the prevalence of mild anemia (from 23% to 26%) and moderate anemia (from 46% to 49%).

In women the initial symptoms of iron deficiency anemia are unnoticeable. In severe cases there will be inadequate oxygen supply to major organs in the body. This will cause various health problems such as kidney failure, lung diseases, and cardiovascular diseases and ultimately it leads to death

A study was conducted to estimate the prevalence of anemia among adolescent girls and to study the socio- demographic factors associated with anemia. Materials and methods: A cross sectional survey was conducted in selected Anganwadi centres of rural area of Hassan district. Three and Fourteen adolescent's girls (10-19 yrs old) were included in the study. The study was conducted from February to April 2011 (3 moths).Data analysis was done by using proportions and Chi-square test. Results: Prevalence of anemia was found to be 45.2%. A statically significant association was found with iron deficiency anemia, weight loss and anemia, pallor and anemia. In the present study it was seen that among the 45.2% of

anemic adolescent girls 40.1% had mild anemia, 54.92% had moderate anemia and 4.92% had severe anemia. Conclusion: A high prevalence of anemia among adolescent girls was found, which was higher in low economic strata. It was seen that anemia affects overall nutritional status of adolescent girls. (Int J Biol Med Res. 2011)

A study was conducted at the faculty of family and community sciences included 100 adolescent girls with mild to moderate anemia. The aim of the study was to identify the effect of drumstick leaves and vitamin C supplementation for the improvement of anemia. The selected samples were divided into two equal groups. Group A was given with drum stick leaf recipies and vitamin C whereas group B was provide with vitamin C alone for 45 consecutive days respectively. The result of the study showed that there was 28.6% reduction of anemia among group A and only 5 % reduction in group B. Therefore the study concluded that drumstick leaves had a major role in the reduction of anemia (Vanisha S Nambiar, 2008)

Early detection, management, nutrition awareness and dietary modification would reduce the severity of anemia. Various measures are undertaken to compact anemia among population of developing countries, like therapeutic supplementation of iron and folate tablets, fortification of diet with iron and various public health programs thereby creating awareness regarding the benefits of rich sources of iron (Sonjna,2010)

The researcher participated in the school health programme and during the physical examination she observed that most of the students have the symptoms of anemia and based on this information the researcher feels that it is important to prevent the anemia among adolescent girls in the homes. Hence the present study was undertaken with a view to evaluate the effectiveness of drum stick leaves juice in increasing haemoglobin level among adolescent girls with anemia.

STATEMENT OF THE PROBLEM

A study to evaluate the effectiveness of drumstick leaves juice to increase the haemoglobin level among adolescent girls with anemia in a selected homes at Madurai district.

OBJECTIVES

1. To assess the prevalence of anemia among adolescent girls.
2. To determine the effectiveness of drumstick leaves juice on levels of haemoglobin among adolescent girls with anemia.
3. To find the association between, the post test level of haemoglobin among adolescent girls with anemia with selected demographic variables
4. To implement the need based awareness programme on anemia among adolescent girls in selected home at Madurai district.

HYPOTHESES

H_1 There will be a significant difference between the pre test haemoglobin level and post test haemoglobin level regarding the effectiveness of drumstick leaves juice among adolescent girls with anemia.

H_2 There will be a significant association between the post test level of haemoglobin among adolescent girls with their selected demographic variables.

OPERATIONAL DEFINITION

1. **Anemia**

   Anemia refers to Iron deficiency anemia and also decrease in hemoglobin level less than 12 gm/dl of blood.

2. **Effectiveness**

   It refers to which the administration of drumstick leaves juice has increased in haemoglobin level

3. **Adolescent Girls**

   It refers to the girls refer belonging to the age group of 10 to 19 years.

4. **Drumstick Leaves Juice**

   Drumstick leaves is prepared by boiling 1 kg of drumstick leaves with 4.5 litre of water and make it boil 45 minutes and strain it well. It will give 4 litre of drumstick leaves juice then add 2 drop of lemon juice in it for every 100 ml of drumstick leaves juice.

5. **Hemoglobin Level**

   WHO/UNICEF/ UNU graded the haemoglobin level

   - 10- 11.9 g/dl is considered as mild anemia,
   - 7 g/dl to 9.9 g/dl is considered as moderate anemia and
   - Less than 7 g/dl is considered as severe anemia.
   - 12 g/ dl is considered as Non anemic

ASSUMPTIONS

The study assumed that,

- Most of the adolescent girls are anemic.
- Drumstick leaves juice helps in improvement of haemoglobin level in anemic adolescent girls.
- The need based health education programme may create awareness among the adolescent girls to make a confident to prevent anemia and its complication.

DELIMITATIONS

- The study will be conducted among adolescent girls who are in the homes at Pasumalai, Madurai.
- The study will be limited to girls in the age group of 10– 19 years only

PROJECTED OUTCOME

The study findings will help to

1. The study will help to identify the level of haemoglobin among adolescent girls.
2. The study will help to evaluate the effectiveness of drumstick leaves juice on the level of haemoglobin among adolescent girls in terms to prevent anemia
3. This study will bring awareness among adolescent girls regarding the prevention of anemia.

CHAPTER II

REVIEW OF LITERATURE

This chapter deals with the related review of literature which includes a written summary of existing knowledge on the research problem. The review of literature includes a broad, comprehensive, in depth systematic and critical review of scholarly print materials and personal communication in the study topics for the logical sequence.

The aim of this systematic review is to summarize the best available information regarding anemia. This chapter is organized in the following sections.

- Reviews on anemia.
- Studies related to anemia.
- Studies related to drumstick leaves in improving haemoglobin level.

REVIEWS ON ANEMIA

"Anemia" occurs when you have less than the normal number of red blood cells in your blood or when the red blood cells in your blood don't have enough hemoglobin. Hemoglobin is a protein. It gives the red color to your blood. Its main job is to carry oxygen from your lungs to all parts of your body. Without oxygen, your organs and tissues cannot work as well as they should. More than 3 million people in the United States have anemia.

Anemia is a serious health and nutritional problem caused by lack of iron in the diet, or poor absorption of iron. Anemia can also be caused by lack of folate or vitamin B_{12} and by disease such as malaria. Hookworm infestations, and sickle cell disease. Menstruation and chronic loss of blood caused by ulcers and other internal bleeding can also lead to anemia. Iron deficiency anemia can result in poor growth and development, low resistance to disease,

poor reproductive functions, increased illness and contributes to deaths in pregnancy and childbirth.

Iron is vital for transporting oxygen in the bloodstream. A deficiency of iron causes anemia, which leads to fatigue, confusion, and weakness. With the onset of adolescence, the need for iron increases as direct consequence of rapid growth and the expansion of blood volume and muscle mass. As adolescents gain muscle mass, more iron is needed to help their new muscle cells obtain oxygen for energy. The onset of menstruation imposes additional iron needs for girls. The Recommended Dietary Allowance (RDA) for iron is 12-15 milligrams (mg) per day.

An adolescent girl is 10 times more likely to develop anemia than a boy. Teenagers are at the highest risk of anemia during their adolescent growth spurt. Among girls, however, menstruation increases the risk for iron deficiency anemia throughout their adolescent and childbearing years.

Anemia is a quantitative or qualitative deficiency of circulating red cells. The situation back home in India and other developing countries is perhaps worse. The causal factors of Anemia are decreased iron supply from inadequate diet, poor bioavailability of iron, increased physiological requirements, abnormal iron loses, malabsorption of iron. Among the world population, two billion people are affected by anemia and mostly it is due to iron deficiency. Kellec, (1996)

Global data base by WHO (2007) on child growth and malnutrition and National Family Health Survey – 2 (2007) in India, had suggested that adolescent girls of urban, semi urban and rural schools in India are found to be anemic and the prevalence rate to be between 61.9 to 82.1 percentage, being highest among rural girls of higher order as compared to urban

poor girls irrespective of their age and menarcheal status. This could be due to differences in dietary habits, worm infestations, poor hygiene, and poor environmental sanitation.

Anemia is the most prevalent nutritional deficiency disorder in the world. It affects all age groups but the most vulnerable are preschool-age children, pregnant women, and non-pregnant women of childbearing age. Globally, anemia affects 1.62 billion people, which corresponds to 24.8% of the population.

Tamil Nadu shows a result that every year 1000 pregnant women were dying due to anemia and it was the main reason for the pre-term baby, new born death and abortion.

The tree of life, Moringa or drum stick tree is considered to be the most nutrient rich plant on earth. Drum stick is a tree that is extremely nutritious and has many potential and healthy uses.In a gram per gram comparison:Drumstick ≡ 7 times Vitamin C in oranges + 4 times Vitamin A in carrots + 4 times Calcium in milk + 3 times Potassium in banana + 2 times Protein in yoghurt + 4 times Fiber of oats + 9 times Iron of spinach.

STUDIES RELATED TO ANEMIA

Adgeppa et al. (1997) conducted a study in Indonesia including 805 adolescent girls showed that 21.1% of the girls (170) were anaemic having haemoglobin level less than 12 g/dl and according to Kanani et al. (1997) stated in their review on anemia among adolescent girls revealed that 70% of adolescent girls in low income communities had Hb levels, 110 g/L. When the WHO cut off of 120 g/L was applied, the prevalence was even higher (80–90%).

Manimaya,L et al., (2000) conducted a descriptive study to assess the prevalence of anemia among adolescent girls for which 630 school going adolescent girls were selected. The result showed that the prevalence of anemia in adolescent girls to be 80.6%. Dietary intake of the adolescent girls revealed that there was an inadequate intake of food. Almost

84.3% of adolescent girls were consuming less than forty percent of required dietary allowance and the finding showed that there was a high prevalence of anemia among the study population ($p<0.001$) due to inadequate intake of iron supplementation.

Muslimmanton,J.D et al., (2000) conducted a cross sectional study to identify the different nutritional and iron status characteristics of young adolescent girls (10-12 years) with iron deficiency anemia and anemia without iron deficiency in the rural coastal area of Indonesia. Anemic girls (N=133) were selected out of 1358 girls from 34 elementary schools. Haemoglobin, serum ferritin, serum transferrin receptor and zinc were measured for their nutritional status. Out of 133 anemic girls, 29 (21.8%) suffered from iron deficiency anemia, which is not significantly related to age and menarche. Further studies recommended to explore other factors associated with anemia and iron deficiency anemia, such as the thalassemia trait and vitamin A deficiency. The current iron folate supplementation programme for pregnant women should be expanded to adolescent girls.

Aggarwal et al. (2003) conducted a study amongst middle socio-economic group of North East Delhi reported a prevalence of anemia as 45%. Similarly, studies on prevalence of anemia from different states of rural India, reported prevalence of anemia from 46% to 98%. Bagchi (2004) stated that anemia has remained a widespread public health problem in countries of the Eastern Mediterranean Region. Prevalence figures vary from a low of 17% to a high of over 70% among preschool children; from 14% to 42% among adolescents and from 11% to over 40% among women of childbearing age. Although the prevalence of anemia has often been used as a proxy indicator for iron deficiency anemia, this approach is not valid in settings where the etiology of anemia is complex or unknown or where other micronutrient deficiencies of folate, vitamin B12 and vitamin A can co-exist.

Nandita, (2006) conducted a descriptive study to assess the prevalence of anemia and impact of anemia control programme among adolescent girls for which 512 school going adolescent girls were selected. The result showed that the prevalence of anemia in adolescent girls to be 80.6%. Dietary intake of the adolescent girls revealed that there was an inadequate intake of food. Almost 90.9% of adolescent girls were consuming less than 50% of required dietary allowance, the finding showed that there was a high prevalence of anemia among the study population ($P< 0.001$) due to inadequate intake of food and there by a poor dietary intake of iron.

Suman.k et.al (2006) conducted a cross sectional study to screen out the health pattern of the adolescent girls in the age group of 10-14 years. A total of 110 healthy adolescents were taken as samples by random sampling technique. Diet survey and serum haemoglobin level were assessed. The result showed that less than 10% of the girls had 12gm/dl of haemoglobin and others were anemic with haemoglobin level in the range of 6 to 11.9 gm/dl ($p<0.05$). The report concluded that the daily food allowance for adolescent girls were inadequate for which the amount of iron and vitamins should be increased.

Pawashe (2006) conducted a study regarding iron nutritional status of adolescent girls belonging to an urban slum and rural areas. Overall anemia was observed in 25% of the girls irrespective of their residence. A higher percentage of rural girls (37.5%) especially below the age of 12 years showed evidence of anemia. Thereafter, the prevalence was similar in both urban and rural girls who had not attained menarche. With increasing age, urban girls who had attained menarche showed an increase in the prevalence of anemia. The prevalence of iron deficiency (serum ferritin < 12 mcg /dl) showed a progressive increase from 28% to 60% over 12 years especially in the girls ($P= 0.03$). Findings suggested that distribution of iron and folate tablets to correct anemia to the vulnerable groups is essential.

Dreyfuss, D.A et al., (2007) conducted an analytical study to assess the anemia among Indian adolescent girls under the project by Health and Family Welfare Bureau. Blood collection was done and serum ferritin, peripheral blood smear and Haemoglobin test were done and analysis was carried out. The result showed that in India severe anemia ranges from 1.6% to 11.7% among adolescent girls, moderate anemia seen in rural area were more (38%) than in urban (11.9%) area ($P< 0.05$). He concluded that the adolescent girls are vulnerable to iron deficiency anemia, which interferes in their physical capacity and work performance. Adolescent period is the preparatory period for the physical development for the future mothers. The young reproductive age group women are more susceptible to anemia, because of their poor dietary intake.

Rohini,O.I et al., (2007) conducted are a retrospective study to assess the prevalence of anemia among adolescent girls in 16 slums at Pune. 1142 Adolescents were selected as samples. Data collection was done based on bio physiological measures, dietary history morbidity history, anthropometric measures, mental history, frequency of lemon consumption with meals, consumption of locally available iron rich foods. The result showed that 1.3% of girls were severely anemic and 58% of girls were moderately anemic ($P< 0.01$) in the study population.

Choudary et al., (2007) conducted a cross sectional study to assess anemia among unmarried adolescent girls in South India, 100 adolescent girls, aged from 11 to 18 years were selected as samples by purposive sampling method. Blood samples were collected and haemoglobin test was done. The result showed that 29% of adolescent girls were affected with severe anemia, rest of them had mild anemia 71% ($P<0.05$). Anemia has a significant association with low socio economic status, religion and reporting of infrequent or non-consumption of meat. He concluded that the haemoglobin status of the adolescent girls need

to be improved through dietary modification along with the iron supplements and nutritional education.

Dreyfuss et al., (2007) conducted an analytical study to assess the anemia among Indian adolescent girls under the project by Health and Family Welfare Bureau. Blood collection was done and serum ferritin, peripheral blood smear and Haemoglobin test were done and analysis was carried out. The result showed that in India severe anemia ranges from 1.6% to 11.7% among adolescent girls, moderate anemia seen in rural area were more (38%) than in urban (11.9%) area ($P< 0.05$). He concluded that the adolescent girls are vulnerable to iron deficiency anemia, which interferes in their physical capacity and work performance. Adolescent period is the preparatory period for the physical development for the future mothers. The young reproductive age group women are more susceptible to anemia, because of their poor dietary intake.

Verma, A., (2008). A cross-sectional descriptive study was carried out among school going adolescent girls in urban as well as rural schools of the Lucknow district, Uttar Pradesh, India. Most of the girls 73(86.9%) were non-vegetarian and 11(13.1%) girls were vegetarian. Majority 64(76.2%) girls had the habit of drinking coffee/tea, 39(46.4%) girls had habit of drinking once a day, 23(27.4%) had habit of drinking twice a day and 2(2.4%) girls had habit of drinking coffee/tea more than two times in a day and 20(23.8%) girls had no habit of drinking coffee/tea. Anemia was found to be higher among girls with the attributes of those with habit of post meal consumption of tea/coffee

Lucy, (2009) The results of studies that focused on adolescent girls and children; showed that anemia is a common problem among children aged 12-16yrs. (West Bank, 21%; Gaza, 19%) as reported by Halileh and Gordon). Another study conducted by Care committee reflects that despite the levels of malnutrition, the prevalence of anemia among

children 12-16yrs of age varies little between the West Bank (43.8%) and the Gaza Strip (44%). Four of every five children in both areas have inadequate serum iron levels (Lucy, 2003)

Wharton, (2009) Iron deficiency was relatively common in all studied age groups. The prevalence rates were (32.4%, 35.3%, 25.9%, and 12.1%) for children 6- 8 years old, 9 to 11 years old, 12 to 14 years old and above 15 years, respectively. Differences in prevalence rates were statistically significant (P = 0.01 at D = 0.05). These results clearly demonstrate the poor iron dietary intake by these children.

Gupta et al. (2010) found that the prevalence of anemia in females 5-30 years was 89.5%, which included 49.8% of mild, 38.2% of moderate and 1.5% of severe anemia cases. The prevalence of anemia in males 5-20 years was 89.9%, with 51.2% suffering from mild, 38% from moderate and 0.7% from severe anemia. Both males and females who were in the younger age group, who were under weight, who belonged to a lower socio-economic status and who had a low activity life style, had a higher prevalence of anemia.

Ramzi ,M., et.al. (2011).A cross sectional study was conducted to investigate the prevalence of anemia, iron deficiency anemia and related risk factors in adolescent school girls in Kavar urban area in southern Iran. A total of 363 adolescent school girls were evaluated. Socioeconomic, demographic and related risk factors were obtained by a questionnaire. Hematological parameters and serum iron indices were measured. The study results shows that there were 21 cases of anemia (5.8%), 31 (8.5%) iron deficiency and 6 (1.7%) iron deficiency anemia . Most of anemic girls (85.7%) had mild anemia. MCV, TIBC, age, and BMI had statistically significant relationship with haemoglobin. Only parasites infestation in the last three months had a 6.83 times more risk of anemia than those without this history

Tatala, Asobayire ; Abalkhail and Shawky, Hashizume et al., (2011) Iron deficiency is the most prevalent and common micronutrient deficiency in the developing world today . The public health effects of iron deficiency include anemia, decreased intellectual and work performance as well as functional alterations of the small bowel (Oski, 1993). Beside other vulnerable age groups, such as infancy and early childhood, adolescence is placed at a high risk level for developing iron deficiency, due to a combination of menstrual iron losses in girls and a rapid physical growth, especially in boys .

Premalatha, T., Valarmathi, S., Srijayanth, P., Sundar, JS., Kalpana, S. (2012) A cross-sectional survey was executed to estimate the prevalence of iron deficiency anemia among adolescent school girls in Chennai, Tamil Nadu. A sample of 400 female school students in the age group of 13-17 years were selected by using stratified random sampling method. Socio demographic details, anthropometric measurements were obtained. Haemoglobin was estimated using cyanmethaemoglobin method. Study results shows that the prevalence of anemia was found to be 78.75% among school students. Chi-square statistics shows significant association ($p<0.05$) of anemia is with type of family, socioeconomic status and diet. In this study 42.5% of girls with BMI<18 were found to be anemic. This study predicts that haemoglobin level tends to decrease as age progresses.

Meenal ,VK., Durge, PM., Kasturwar, NB. (2012). A cross sectional community based study was conducted among 272 adolescent girls in an urban slum area under Urban Health Training centre, department of Community Medicine, NKP Salve Institute of Medical science, Nagpur from June 2009 to February 2010. Out of five areas one area was selected by simple random sampling. Information regarding socio-demographic and menstrual factors was recorded in pre-designed, pre-tested proforma. Haemoglobin estimation was done by Sahli's haemoglobin meter. Data was analyzed by mean, standard deviation and chi square test. The study result shows that the prevalence of anemia was found to be very high (90.1%)

among adolescent girls. Majority of the girls were having mild or moderate anemia (88.6%). The study concluded that nutrition education along with nutritional supplementation and iron folic acid tablets should be provided to all girls.

Harshad Pate, Harsha Solanki, Vibha Gosalia, Falguni Vora, M. P. Singh (2013).In this study, when explored about anemiamore than 50% were not aware about anemia,73.5% & 92.6% young college girls were nothaving knowledge about its preventive & treatmentmeasures. However after health education response for the same improved significantly i.e.89.7% became aware about anemia, 92.6% young college girls then knew about iron deficiency symptoms, 88.2% became aware for its preventive measures & 88.2% gained knowledge on its treatment part. Also in a study done in Haryana (SFWACF 1998) involving intervention to young girls it was seen that knowledge & awareness of the girls regarding anemia & iron rich foods increased invariably

B. D. Arya Girls College, Jalandhar Cantt., Punjab, India (2014) Anemia is the most prevalent nutritional deficiency disorder in the world. It affects all age groups but the most vulnerable are preschool-age children, pregnant women, and non-pregnant women of childbearing age. Globally, anemia affects 1.62 billion people, which corresponds to 24.8% of the population. The highest prevalence of anemia exists in the developing world where its causes are multi-factorial. National Family Health Survey statistics reveal that every second Indian woman is anaemic and one in every five maternal deaths is directly due to anemia. This review will focus on recent advances in our understanding of the burden of anemia in specific sub-groups, the causes and consequences of anemia among women.

STUDIES RELATED TO DRUMSTICK LEAVES IN IMPROVING HAEMOGLOBIN LEVEL

Nnam Ngozi Ma, 2009.A study was conducted to identify the effects of Moringa Olifera leaves for th improvement of iron status among infants (6- 12 months) in Nigeria. Study conducted among 40 infants, for haemoglobin, serum ferritin, serum retinol, the group was assigned to test group and control group. The test group received maize traditional complementary food with Moringa Oleifera and control group received only maize traditional complementary foods and the post assessment was done. The result showed a makeable increase in mean Hb from 10.65- 12.98 gm/dl among the test group.

Vanisha S Nambiar* Shilpa Parnami, Parul Guin. July 2010.Drumstick leaves (DL) with its high beta carotene content (19690 mcg/100g) along with vitamin C from lemon juice may have a positive impact in the mobilization of stored iron and increase hemoglobin levels of anemic subjects. The study conducted to determine the effect of DL and vitamin C supplementation on hematological indices of young girls (16-21 years). Based on pallor, 100/700 girls studying in first and second year the Faculty of Family and Community Sciences were selected and assessed for hematological Indices (Hb, Hct, PCV, MCV, MCHC) and red cell morphology and were divided into Group A (329 RE of Beta carotene from DL rich recipes (boiled mung/desi chana/kabuli chana) and 5.85 mg Vitamin C as lemon juice, n=21), Group B (329 RE from the above DL recipes, n=20) and Group C (recipes without DL leaves, n=21) for 45 days respectively.Post supplementation data revealed 28.6% reduction of anemia in Group A, by followed by 5% in group B and 4.7% in group C. There was a positive change observed in red cell morphology (normocytic normochromic) in Group A (18%) and B (2.6%) respectively. Similar results were seen for RBC, MCV and MCHC. Group B which received drumstick leaves showed small positive change in MCH showing a causal association between VA and iron metabolism. The study

results that young adult women of the middle and high-income groups of urban Vadodara (54%). It also shows a strong association between vitamin C from lemon juice and iron and a causal association between VA available from DL and iron metabolism.

Madukwe E. U.Ugwuoke A. L. and Ezeugwu J. O. March, 2013. This study evaluated the effectiveness of dry Moringa oleifera leaf powder in the management of anemia in adult albino rats. The proximate, mineral, vitamin and phytochemical composition of dry M. oleifera leaf powder were analysed. Twelve adult albino rats grouped into three were used. Cyclophosphamide was used to induce anemia into them. The percentage proximate values were protein (26.28%), ash (7.69%), carbohydrate (49.35%), crude fibre (7.48%) and moisture (7.05%). The rats whose feed were supplemented with M. oleifera leaf powder showed superior attributes to the unsupplemented group. The study showed dry M. oleifera leaf powder is promising in the management of anemia.

Dr.Mangala Subramanian (2013). Iron deficiency anemia (IDA) is most prevalent among Indian women in reproductive age from lower socio economic strata and 80% of women with anemia suffer from IDA. This study was done with the intention of finding efficient substitutes in the form of non haem iron of vegetable origin i.e. Moringa oleifera leaves (drumstick) and jaggery to treat anemia. Women belonging to lower socio-economic strata in suburban/rural Bangalore aged 15-45 were the target group. A simple random sampling of 60 women suffering from IDA was taken where 30 women were assigned to the intervention group and 30 to the control group. Diagnosis of anemia was done using Tallqvist's haemoglobin scale. The intervention group was then given a therapy which consisted of 100gm of Moringa oleifera and jaggery (dry weight) in a ratio of 80:20 for thirty days. The inhibitors of iron absorption (milk, phytates, and tannins) were not taken along with the supplements. After thirty days the haemoglobin levels were analysed again and recorded. The results were analysed based on percentages and proportions. Student's t test

was used to find out any significant difference between intervention and the control group. At the end of the supplementation period (30 days), the women in intervention group showed an increase in haemoglobin level. By the Student's t test, the post intervention data is highly significant,t=4.109 (P <0.001).This study shows that Moringa oleifera with jaggery has significantly improved haemoglobin levels of anaemic women. This can be promoted in the community for women with iron deficiency anemia. Further studies with larger samples maybe performed to corroborate the above data.

CONCEPTUAL FRAMEWORK

The conceptual framework provides a conceptual perspective regarding the interrelating phenomena. It deals with abstractions (concepts) that are assembled by virtue of their relevance to a common theme. Conceptual models are useful in the research process in clarifying concepts and their associations, in enabling researchers to place a specific problem into appropriate context.

The investigator adopted Widenbach's Helping Art Theory. The conceptual frame work was developed by Ernestine Widenbach's in 1964. The theory has two parts 1) Helping Art of clinical Nursing Theory and 2) Nursing Practice. Helping Art of Clinical Nursing Theory is a Prescriptive theory for nursing which describes a desired action and the ways to attain it. It consists of three factors, central purpose, prescription and realities.

Central Purpose:

It refers to what the researcher wants to accomplish. It is the overall goal. It is the task or the assignment directing towards the attainment of goal. The central purpose of this study is to assess the effectiveness of drumstick leaves juice in improving haemoglobin level among adolescent girls.

Prescription:

It refers to the plan of care for a patient. It includes the action and the rationale for that action which fulfils the central purpose. Actions can be voluntary or involuntary. In this study administration of drumstick leaves juice is the action.

Realities:

It refers to the physical, physiologic, emotional, spiritual factors that involves in nursing actions. In this theory they are five realities. They are as follows.

Agent: One who directs all action towards the goal and has capacities, capabilities, commitment, and competence to provide care. In thus study agent is the researcher who directs all the actions towards the goal

Recipient: One who is vulnerable and dependent and receives all attention.

Here all the adolescent girls with the age group of 10 -19 years with the haemoglobin level between 7- 11.9 gm/dl.

Goals: It refers to the desired outcome of the action. Increase in haemoglobin level is the goal of the study.

Means: This refers to the activities or devices used to achieve the goal.

In this study it is administration of drumstick leaves juice in improving haemoglobin level among adolescent girls.

Frame work: It refers to the facilities in which it is practiced. Here it refers to the CSI girls higher secondary school, Pasumalai.

The main concepts of Widenbach's nursing practice theory were

- Identifying need for a help.
- Ministering needed help
- Validating that need for help was met

Identifying need for help:

It refers to the viewing the individual's unique experiences and perceptions. Identification involves assessment of haemoglobin level of adolescent girls.

Ministering the needed help:

It refers to the provision of the needed help. I this study it refers to the administration of drumstick leaves juice to the adolescent girls.

Validating that a need for help was met:

It refers to the restoration of functional ability through the implementation of action. Validation includes reassessment of haemoglobin level.

Projected outcome:

Administration of drumstick leaves juice to the adolescent girls will be effective in increasing haemoglobin level.

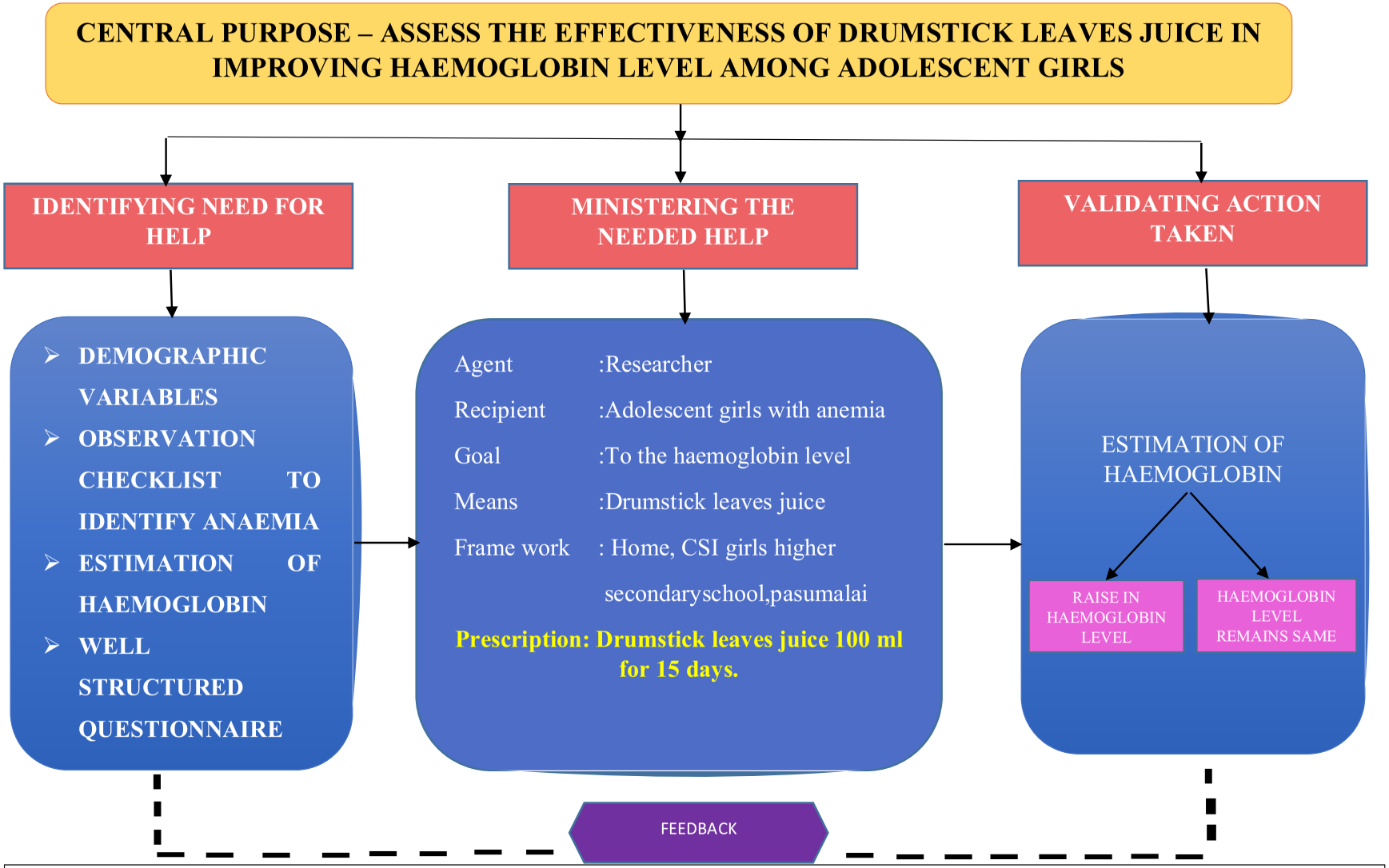


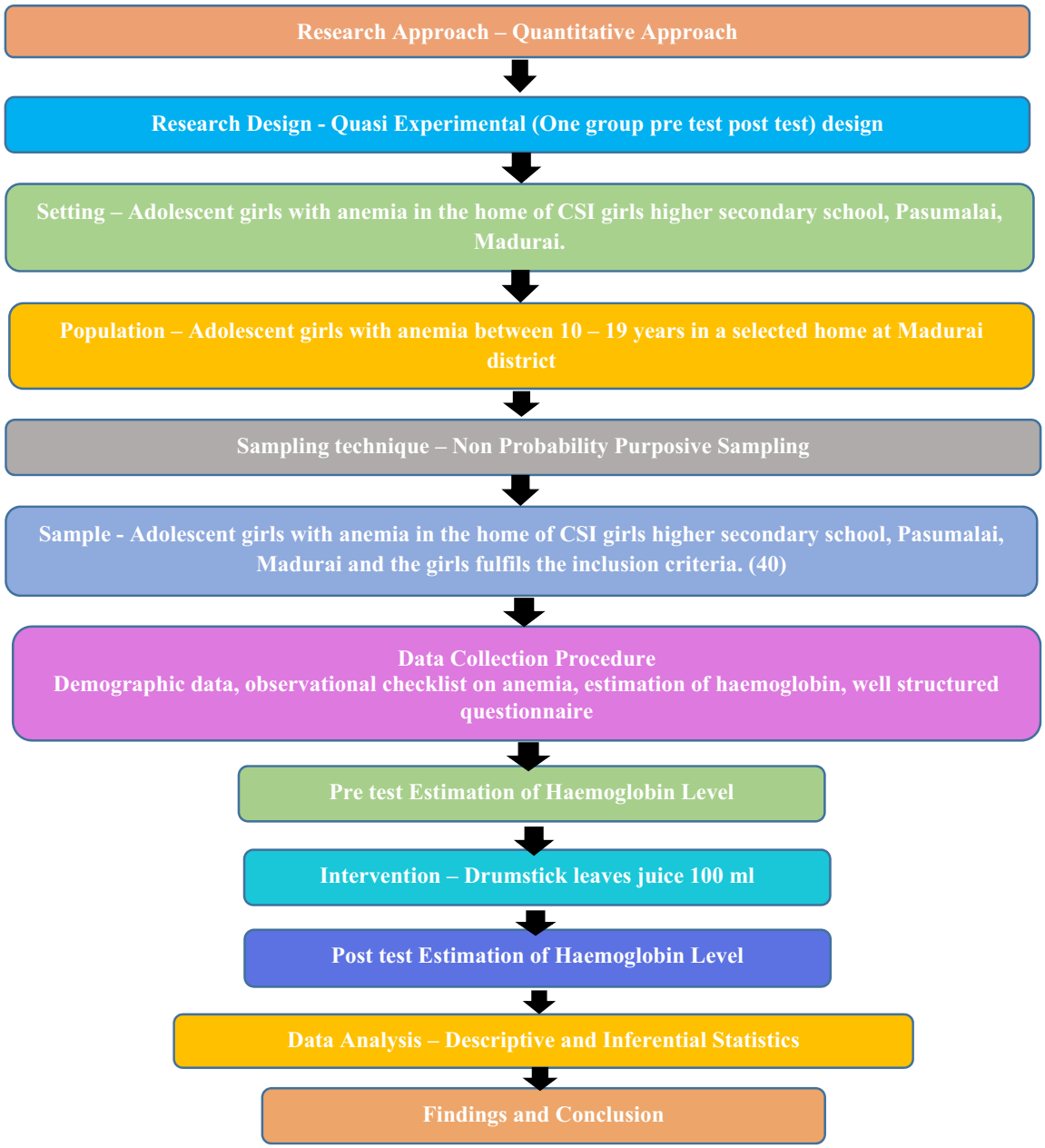
Figure 1 Widenbach's Helping Art Theory (1964) To Assess The Effectiveness Of Drumstick Leaves Juice In Improving Haemoglobin Level Among Adolescent Girls

CHAPTER III

METHODOLOGY

Research methodology is a science of study how research is done scientifically and it is a systemic way to solve the problems effectively which enables the researcher to project the research undertaken. This chapter deals with the research approach, research design, variables, settings, sample and sampling technique, description of the instrument, content validity of the tool, pilot study, data collection procedure, plan for data analysis and protection of human rights. This present study was done to assess the effectiveness of drumstick leaves juice to improve the haemoglobin level of an adolescent girls.

Figure 2 Schematic representation of research design



RESEARCH APPROACH

Quantitative research approach was used for this study

RESEARCH DESIGN

The research design selected for the study was Quasi experimental design adopted with one group pre- test post- test design.

GROUP	PRE TEST	INTERVENTION	POST TEST
E – Research Group	O_1	X	O_2

KEY

E = Research Group

O_1 = Pre-assessment of haemoglobin level

X = Administration of drumstick leaves juice

O_2 = Post-assessment of haemoglobin level

RESEARCH VARIABLES

INDEPENDENT VARIABLE

The independent variable for this study is Drumstick leaves juice

DEPENDANT VARIABLE

The dependent variable for this study is Haemoglobin level

BASELINE VARIABLE

The baseline variable for the study is Age, educational status, religion, type of family, no of siblings, monthly income of the family, source of information, menstrual history, dietary pattern and hygienic practices

SETTING OF THE STUDY

The setting was selected based on acquaintance of the investigator with the institution, feasibility of conducting the study, availability of the sample, permission and proximity of the setting to investigation. The study was conducted in home at CSI girls higher secondary school, Pasumalai, which is situated at a distance of 2 km from C S I Jeyaraj Annapackiam College of nursing, Madurai. There are 94 adolescent girls staying in the home.Keeping in mind, the time available for data collection and familiarity to the area, the investigator have chosen this settings.

POPULATION

TARGET

The target population of this study was comprised of all the adolescent girls with anemia.

ACCESSIBLE

The accessible population were adolescent girls with anemia who were staying in the home at CSI girls higher secondary school, Pasumalai, Madurai.

SAMPLING TECHNIQUE

Non probability Purposive sampling was used to select the sample for the study.

SAMPLES

The samples selected for this study were Adolescent's girls with anemia who were staying in the home at CSI girls higher secondary school, Pasumalai, Madurai those who have fulfilled the inclusion criteria

SAMPLE SIZE

Sample represents the adolescent between the age group of 10-19 years. The sample size for this quasi experimental study was arbitrarily determined to be 40 adolescent girls

CRITERIA FOR SAMPLE SELECTION

The samples were selected based on the following inclusion and exclusion criteria.

INCLUSION CRITERIA

1. Adolescent girls with the age group of 10 – 19 years.
2. Adolescent girls who knows Tamil and English
3. Girls who are willing to participate

EXCLUSION CRITERIA

1. Persons who are having haemoglobin level less than 7 gms and 12 gms and above
2. Girls who are having any other blood disorders such as sickle cell anaemia, haemophilia, and thrombocytopenia.
3. Girls who are under treatment and not staying in the home.

DEVELOPMENT OF AN INSTUMENT

After intensive library search and consultation with experts and with the personal and professional experience, an observational checklist was prepared to assess the prevalence of anaemia and well-structured questionnaire to collect the demographic data of the adolescent girls were developed.

DESCRIPTION OF THE INSTRUMENT

The tool for data collection consist of 4 parts

Part 1: Demographic data

Consist of 10 questions about demographic variable such as age, educational status of father, educational status of mother, religion, type of family, no of siblings, monthly income of the family, source of information, menstrual history, dietary pattern and hygienic practices.

Part 2: Observational checklist

An observational checklist consist of 20 items which used to assess the signs and symptoms of anaemia among adolescent girls through clinical assessment. There were 20 items pertaining to the conditions related to anaemia such as 1) Shortness of breath, 2) Dizziness, 3) Palpitation, 4) Loss of appetite 5) Numbness or coldness in your hand and feet 6) Fatigue 7) Hair loss 8) Headache 9) Angular cheilitis (inflammatory lesions at the mouth's corners) 10) Pale conjunctiva 11) Pale tongue 12) Pale nail 13) Pale skin 14) Koilonychia (spoon-shaped nails) 15) Nails that are weak 16) Nails that are Brittle, 17) Problems concentrating or thinking 18) Heavy menstrual bleeding, 19) Normal capillary refilling, 20) Delayed capillary refilling.

Part 3:

Clinical assessment of haemoglobin level estimation of adolescent girls before and after intervention.

Part 4:

A well-structured questionnaire which consists of 23 questions regarding knowledge on anemia. The questions were further divided into 8 parts. General, risk factors, causes, signs and symptoms, diagnostic findings, treatment and management, preventive measures and complication.

SCORING PROCEDURE

As per the WHO/ UNICEF, the estimation level of haemoglobin

Mild anemia - 10.1 to 11.9 gm%

Moderate anemia - 7 to 10 gm %

Severe anemia - < 7 gm %

Normal - 12 gm % and above

The knowledge score was classified as follows

0 – 50% - Inadequate knowledge

51 – 75% - Moderate knowledge

76 – 100% - Adequate knowledge

VALIDITY OF THE TOOL

The content validity of the tool was obtained from 12 experts including 10 nursing experts, 1 sociologists and 1 physicians. Based on their valid suggestions, a few items were modified and the final tool was prepared as per the suggestions given by the experts. The tool was drafted in English. The Tamil translation was done by a Tamil expert and language validity was established.

RELIABILITY OF THE TOOL

Reliability was established through test – retest method. The tool was administered to 10 adolescent girls with anemia in homes at LPNI girls higher secondary school, K Pudur, Madurai. After the gap of 15 days, the retest was done. The Karl Pearson's coefficient of correlation was computed and the reliability was found to be 0.96. The tool was found to be reliable.

DATA COLLECTION PROCEDURE

Data collection is the process of gathering information needed to discuss a research problem. Data collection was done for the period of 6 weeks. Before commencing the special project, the permission to conduct the study should obtained by the headmistress.

The list of home children was obtained from the warden and the samples were short listed based on sample selection criteria using non probability purpose sampling technique.40 adolescent's girls were selected. The investigator initially had a rapport with the sample and the purpose of the study was explained to each with informed consent, the demographic data have been collected by using well-structured questionnaire and clinical assessment was done as per observation checklist and estimation of haemoglobin level among adolescent girls were tested by Sahli method in the clinical laboratory by the technicians.

On the 1st day onwards, the drumstick leaves juice 100 ml was prescribed by the medical officer was given before food to the sample for 15 days and after that on 16th day, the post test was done by the assessment of haemoglobin.

PLAN FOR DATA ANALYSIS

The demographic data were analysed by using descriptive measures (Frequency and percentage).Prevalence of anemia and haemoglobin level were analysed by using descriptive measures (Mean and SD). Effectiveness of drumstick leaves juice was analysed by using paired "t" test. The association between haemoglobin level with their selective demographic variables among adolescent girls were analysed by using inferential statistics (chi square- $\chi 2$ test).

PILOT STUDY

The pilot study was conducted during the month of November 2014 among 10 adolescent girls in homes at LPNI higher secondary school home, K Pudur, Madurai, to evaluate the effectiveness of the drumstick leaves juice and to find out the feasibility of conducting the main study. The well- structured questionnaire and observational checklist was used for data collection. The time taken to complete tool was found to be satisfactory in terms of simplicity and clarity. The administration of the tool and intervention were implemented. The feasibility and the availability of the sample and cooperation of respondents, accessibility of setting and financial requirement was established. Pilot study helped the investigator to confirm the feasibility of carrying out the main study.

ETHICAL CONSIDERATION

Approval from the research committee and concerned authorities was obtained. Each individual was informed about the purpose of the study and confidentiality was promised and ensured. The client has the freedom to leave the study at their wish without assigning any reason. Thus the ethical issues were ensured in this study.

PROTECTION OF HUMAN RIGHTS

The research proposal is approved by the dissertation committee prior to the pilot study and the main study permission was sought from the head of the Community health nursing department of C.S.I Jeyaraj Annapackiam College of Nursing, Madurai. A formal consent was obtained from the respondents of the study (adolescent girls) before administering the questionnaire.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the data. In this study, the effectiveness of drumstick leaves juice in improving haemoglobin level among adolescent girls was assessed. The data were collected through observational checklist among adolescent girls regarding signs and symptoms of anemia. This result was computed using descriptive and inferential statistics based on the objectives of the study. The findings of the study are presented in this chapter under the four sections as follows:

Section I: Demographic variables of an adolescent girls with anemia.

Section II: Prevalence of anemia among adolescent girls with anemia

Section III: Effectiveness of drumstick leaves juice on level of haemoglobin among adolescent girls with anemia .

Section IV: Association between, the post interventions level of haemoglobin among adolescent girls with anemia with selected demographic variables.

Section V: Existing knowledge of adolescent girls on Anemia.

SECTION I: DEMOGRAPHIC VARIABLES OF ADOLESCENT GIRLS WITH ANEMIA.

Table 1.1 Distribution of adolescent girls with anemia based on their demographic variables such as age, religion, type of family and total no of siblings. N = 40

S.N0	Demographic variables	Frequency	Percentage (%)
1.	**Age**		
	A. 10- 15	27	67.5
	B. 16- 19	13	32.5
2.	**Religion**		
	A. Hindu	35	87.5
	B. Christian	5	12.5
	C. Muslim	0	0
	D. Others	0	0
3.	**Type of family**		
	A. Nuclear	35	87.5
	B. Joint	4	10
	C. Extended	1	2.5
4.	**Total No of siblings**		
	A. Below 2	33	82.5
	B. Above 2	7	17.5

Table 1.1 shows that among the adolescent girls with anemia, maximum 27 (67.5%) of them were in the age group of 10-15 years and regarding religion, majority 35 (87.5%) of them were Hindu. In relation to type of family, nearly 35 (87.5%) of them belongs to nuclear family. most 33 (82.5 %) of them are having below 2 siblings.

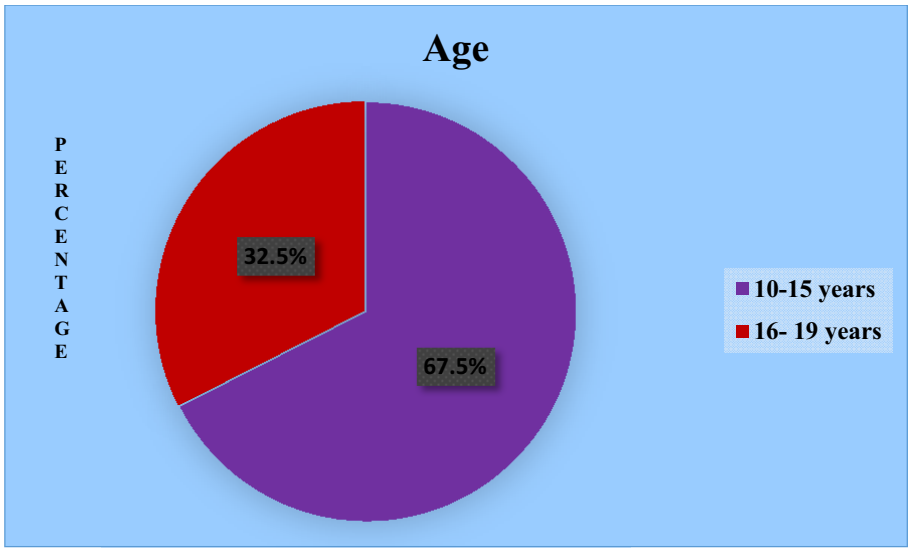


Figure 3. Distribution of age among adolescent girls with anemia

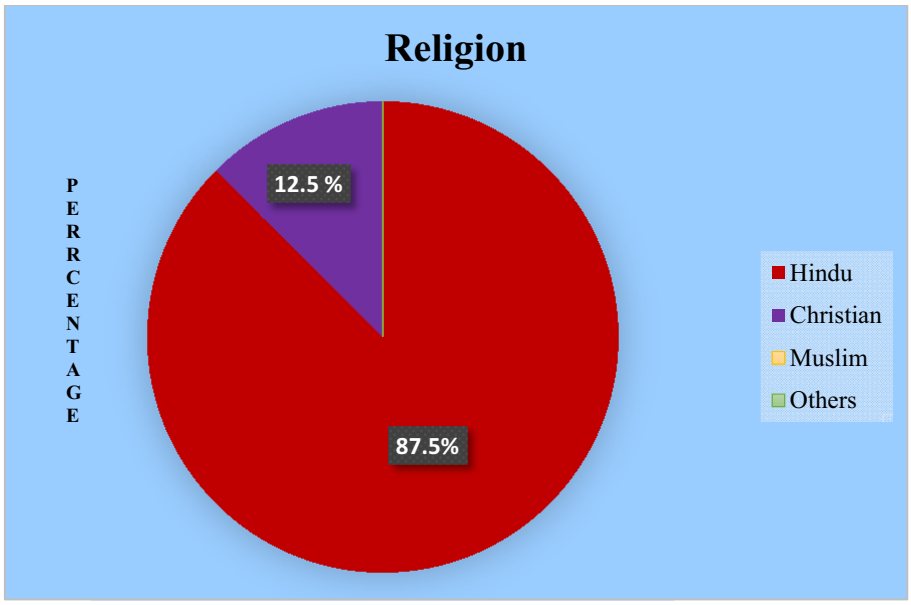


Figure 4. Distribution of religion among adolescent girls with anemia

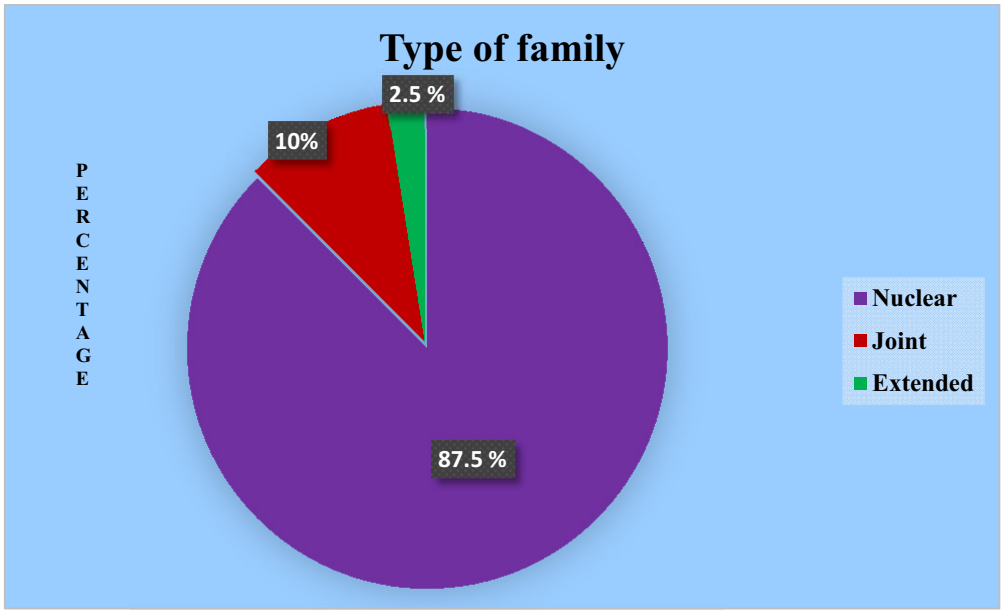


Figure 5. Distribution of type of family among adolescent girls with anemia

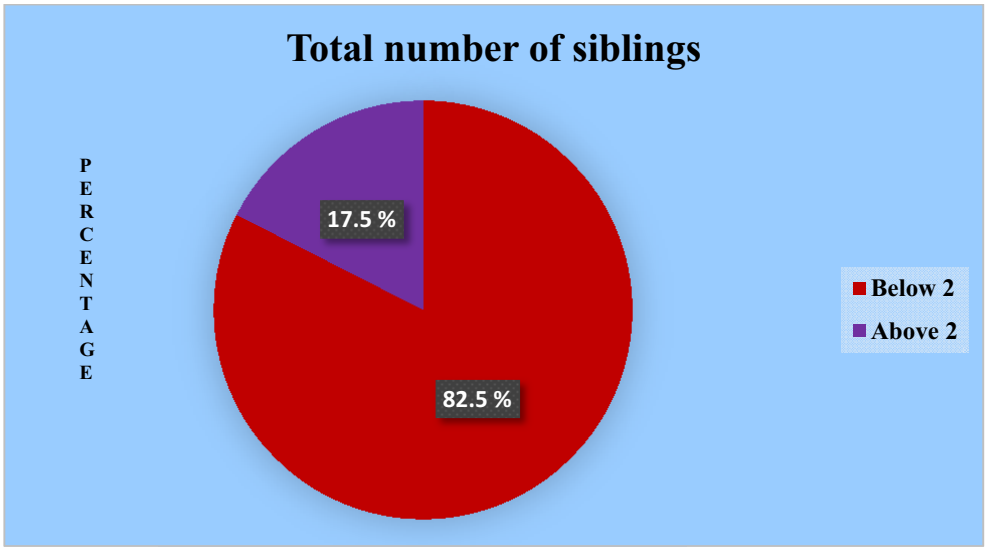


Figure 6. Distribution of total number of siblings among adolescent girls with anemia

Table 1.2 Distribution of adolescent girls with anemia based on their demographic variables such as educational status of a father and educational status of a mother.

N = 40

S.N0	Demographic variables	Frequency	Percentage (%)
5.	**Educational status of a father**		
	A. Uneducated	16	40
	B. Primary	6	15
	C. High School	16	40
	D. Higher secondary	2	5
6.	**Educational status of a mother**		
	A. Uneducated	18	45
	B. Primary	2	5
	C. High school	17	42.5
	D. Higher secondary	3	7.5

Table 1.2 affirm that among adolescent girls with anemia, about educational status of the father, majority 16 (40 %) of them were uneducated as well as high school and in regards to educational status of the mother, largest number 18 (45%) of them were uneducated.

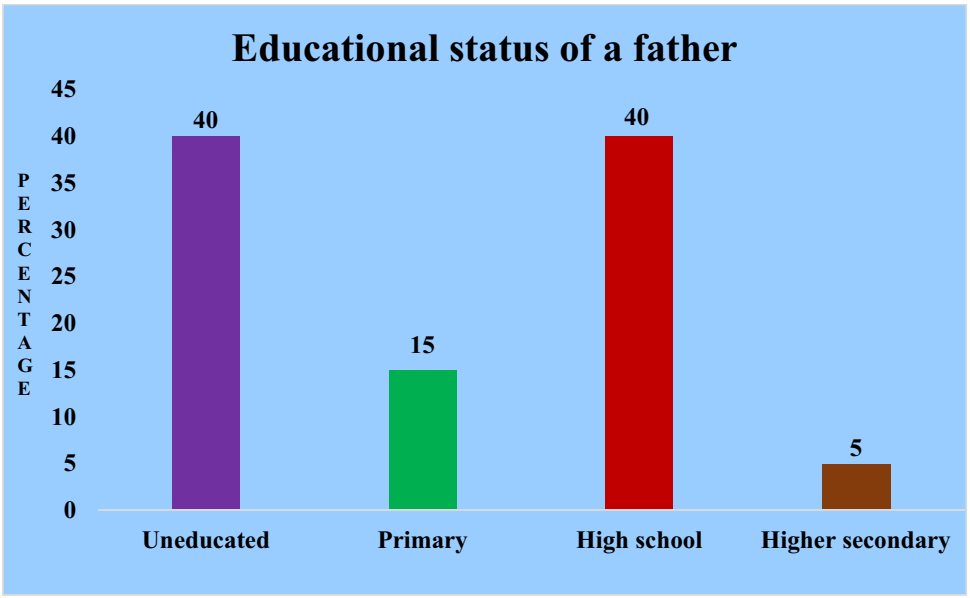


Figure 7. Distribution of educational status of a father among adolescent girls with anemia

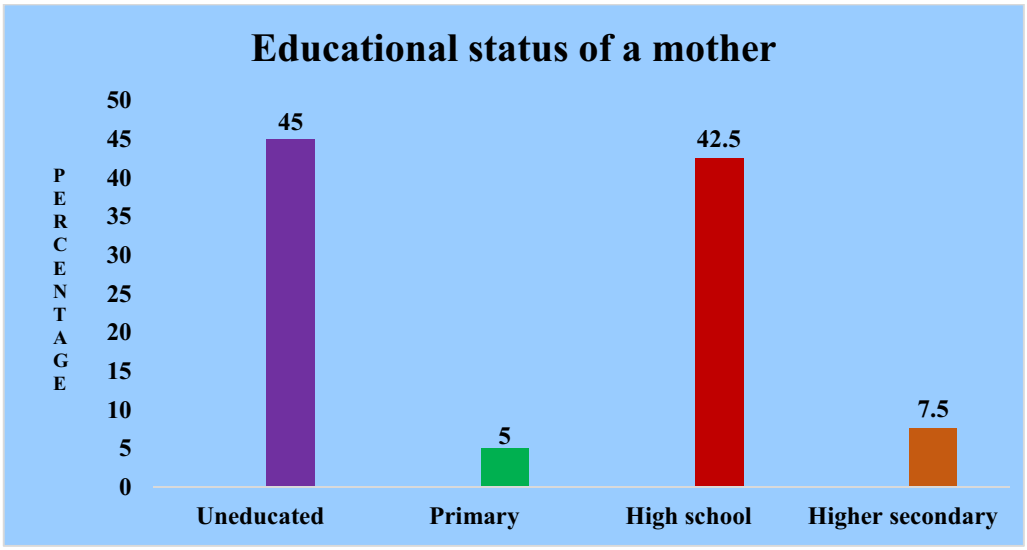


Figure 8. Distribution of educational status of a mother among adolescent girls with anemia

Table 1.3 Distribution of adolescent girls with anemia based on their demographic variables such as monthly income of the family, source of information. N = 40

S.N0	Demographic variables	Frequency	Percentage (%)
7.	**Monthly income of the family**		
	A. Rs.1000 – 4000	35	87.5
	B. Rs.4001 – 8000	4	10
	C. Rs.8001 – 12000	1	2.5
	D. Above Rs.12000	-	-
8.	**Source of information**		
	A. Mass media	1	2.5
	B. Books and magazine	12	30
	C. Relatives and peer group	6	15
	D. Health personnel	8	20
	E. Never heard	13	32.5

Table 1.3 shows that among the adolescent girls with anemia, nearly 35 (87.5%) of their family had an income between Rs. 1000 – 4000.With regards to source of information, maximum 13 (32.5%) had never heard about anemia.

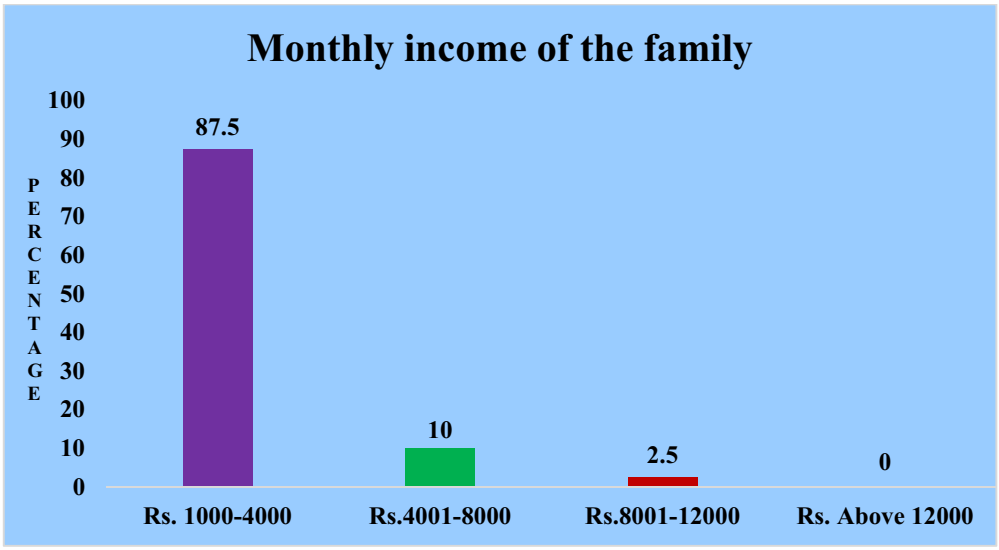


Figure 9. Distribution of monthly income of the family among adolescent girls with anemia

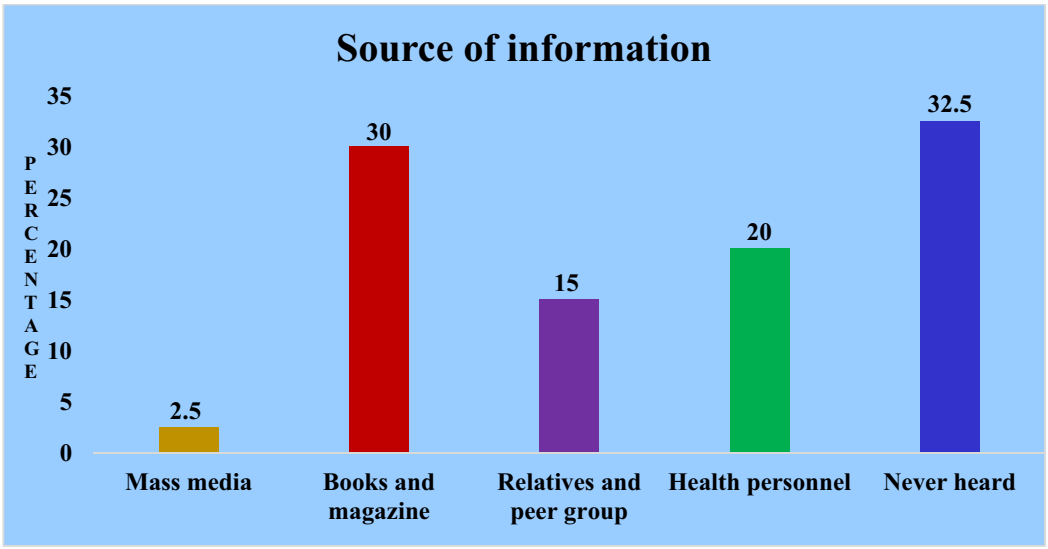


Figure 10. Distribution of source of information among adolescent girls with anemia

Table 1.4 Distribution of adolescent girls with anemia based on their demographic variables such as menstrual history **N = 40**

S.N0	Demographic variables	Frequency	Percentage (%)
	MENSTRUAL HISTORY		
9.	**Age at menarche**		
	A. Below 13	15	37.5
	B. 13-17	25	62.5
10.	**Pattern of menstruation**		
	A. Regular	16	40
	B. Irregular	24	60
11.	**Flow of menstruation**		
	A. Normal	19	47.5
	B. Heavy	16	40
	C. Scanty	5	12.5
12.	**Days of menstruation**		
	A. 3 – 5 days	29	72.5
	B. 6 – 8 days	11	27.5
	C. Above 8 days	0	0

Table 1.4 depicts that among adolescent girls with anemia, majority 25(62.5%) of their menarche age is between 13 – 17.Concerning the pattern of menstruation, largest number 24 (60%) of them had irregular menstruation. In relation to flow of menstruation, most 19 (47.5%) of them had normal flow and nearly 29 (72.5%) of them had 3- 5 days of menstruation.

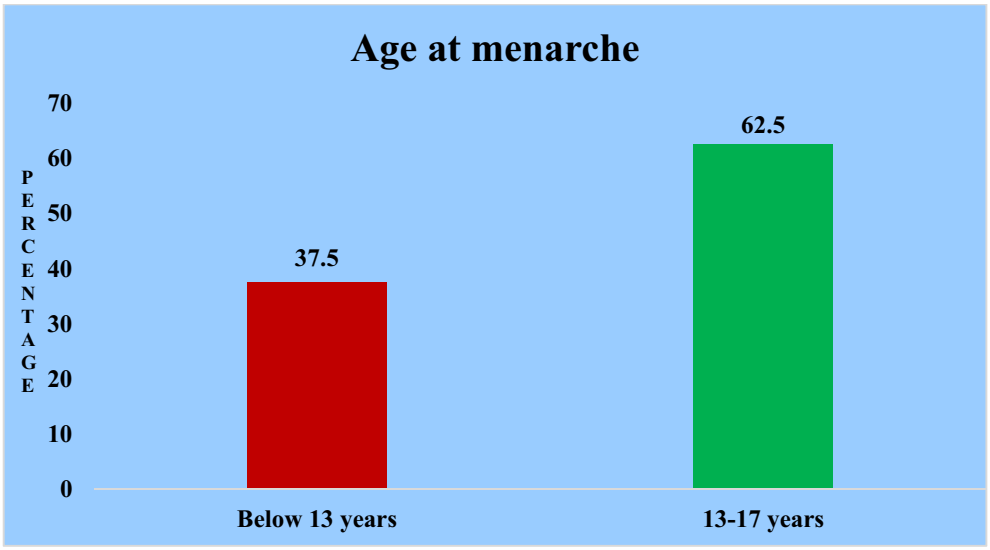


Figure 11. Distribution of age at menarche among adolescent girls with anemia

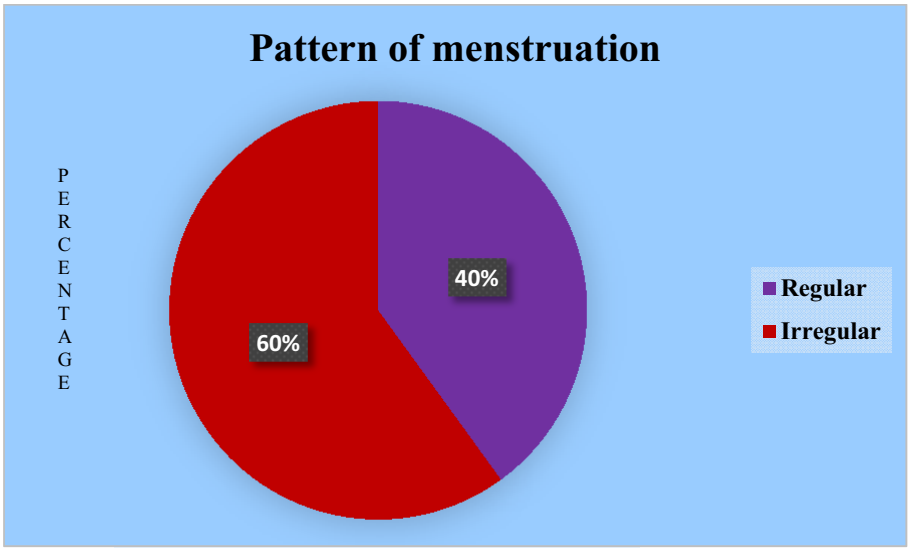


Figure 12. Distribution of pattern of menstruation among adolescent girls with anemia

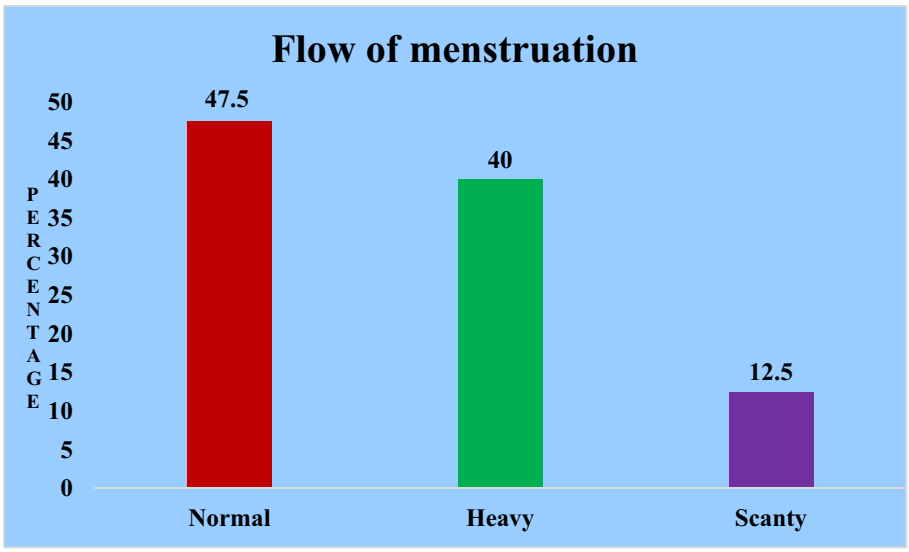


Figure 13. Distribution of flow of menstruation among adolescent girls with anemia

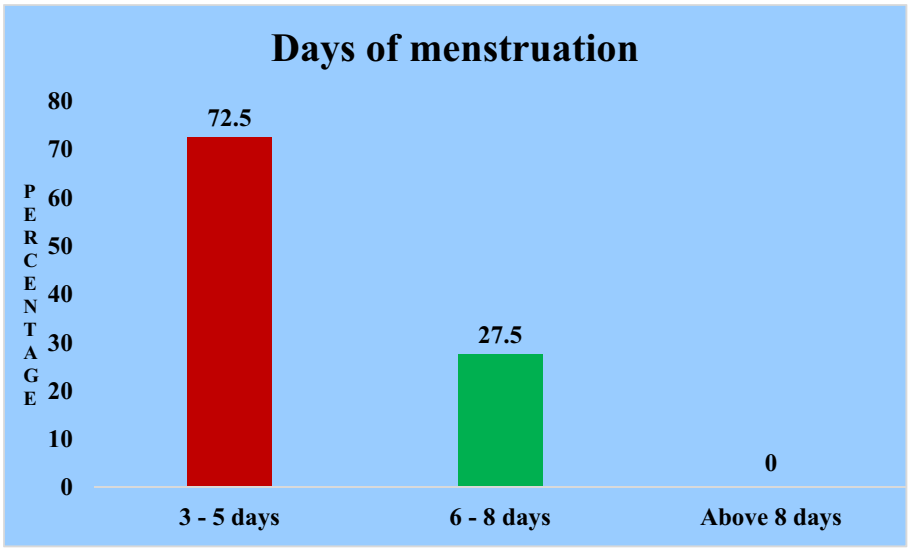


Figure 14. Distribution of days of menstruation among adolescent girls with anemia

Table 1.5 distribution of adolescent girls with anemia based on their demographic variables such as dietary pattern. **N = 40**

S.N0	Demographic variables	Frequency	Percentage (%)
	DIETARY PATTERN		
13.	**Type of diet**		
	A. Vegetarian	2	5
	B. Mixed vegetarian	38	95
14.	**Intake of beverages coffee/tea/milk**		
	A. Yes	28	70
	B. No	12	30

Table 1.5 notify that among the adolescent girls with anemia, nearly 38 (95%) of them belongs to mixed vegetarian type of diet and majority 28 (70%) of them had intake of beverages.

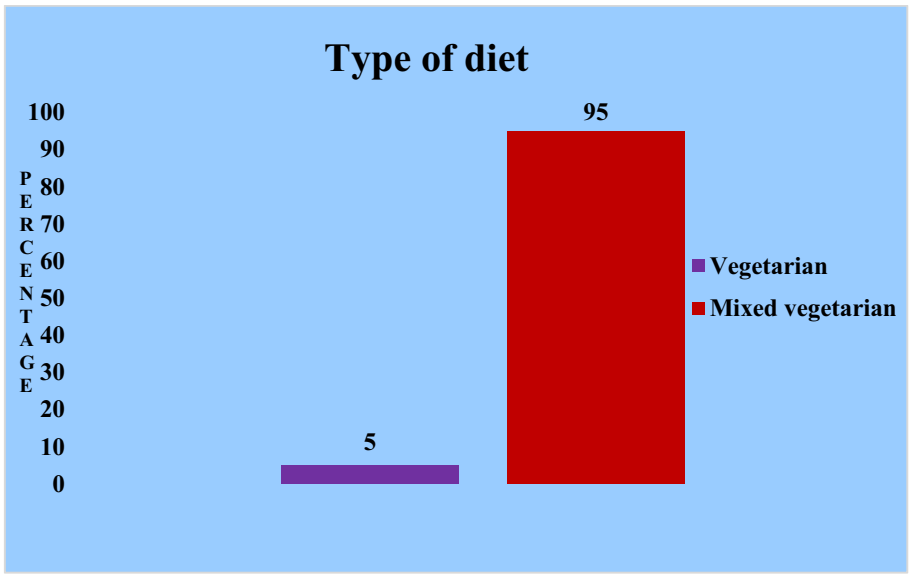


Figure 15. Distribution of type of diet among adolescent girls with anemia

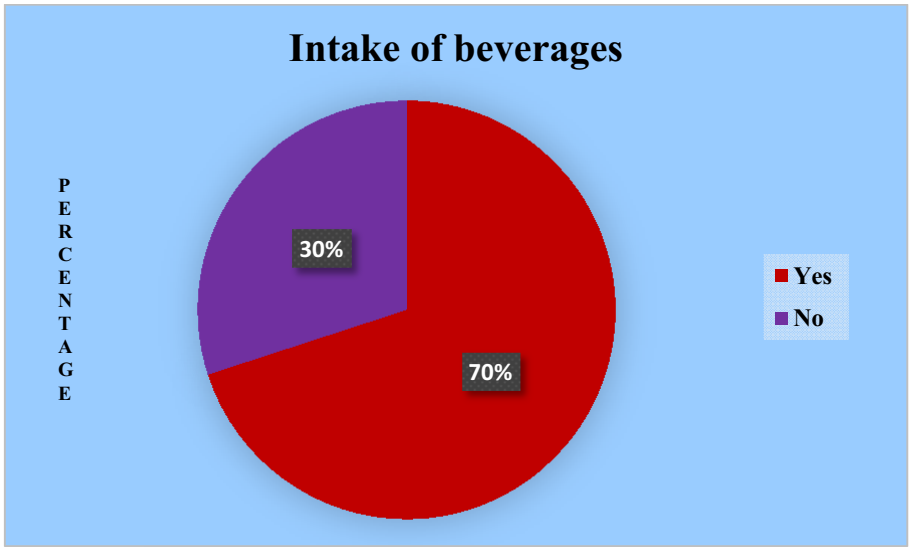


Figure 16. Distribution of intake of beverages among adolescent girls with anemia

Table 1.6 Distribution of adolescent girls with anemia based on their demographic variables such as worm infestation. N = 40

S.N0	Demographic variables	Frequency	Percentage (%)
	HISTORY OF WORM INFESTATION		
15.	**Have you done deworming before**		
	A. Yes	40	100
	B. No	0	0
16.	**How often you will do deworming**		
	A. Once in 6 month	40	100
	B. > 6 month	0	0
17.	**Do you use chapels when you go to toilet**		
	A. Yes	13	32.5
	B. No	27	67.5
18.	**Do you wash hands with soap and water after each defecation**		
	A. Yes	3	7.5
	B. No	37	92.5

Table 1.6 reveals that among adolescent girls with anemia, nearly all 40 (100%) of them had done deworm and about 40 (100%) of them had dewormed once in 6 month. Regarding using chapels for toilet, maximum 27 (67.5%) of them didn't use chapels for toilet and large number 37 (92.5%) of them will not wash hands with soap and water after each defecation.

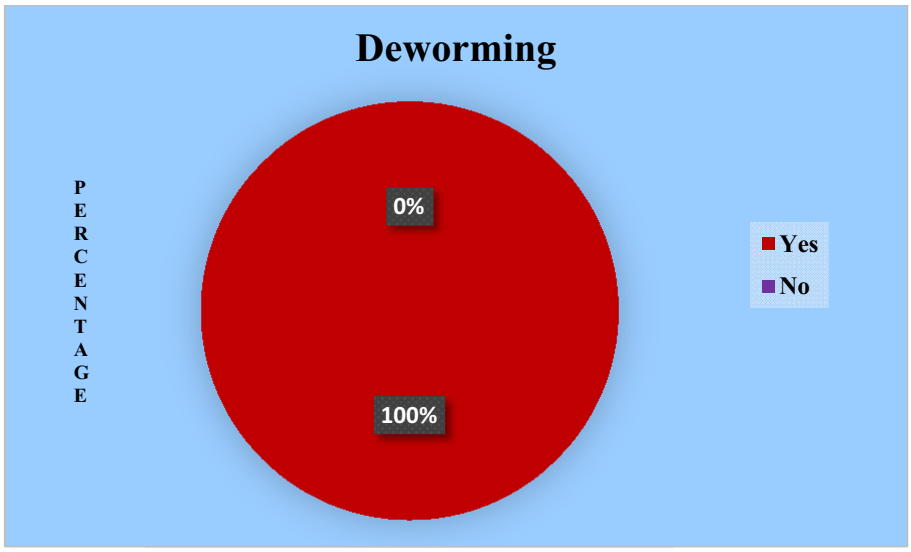


Figure 17. Distribution of deworming among adolescent girls with anemia

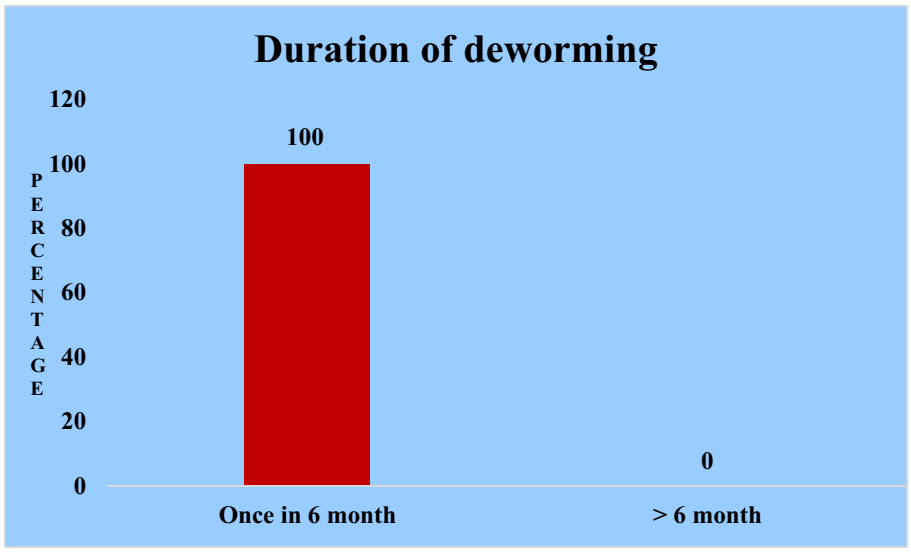


Figure 18. Distribution of duration of deworming among adolescent girls with anemia

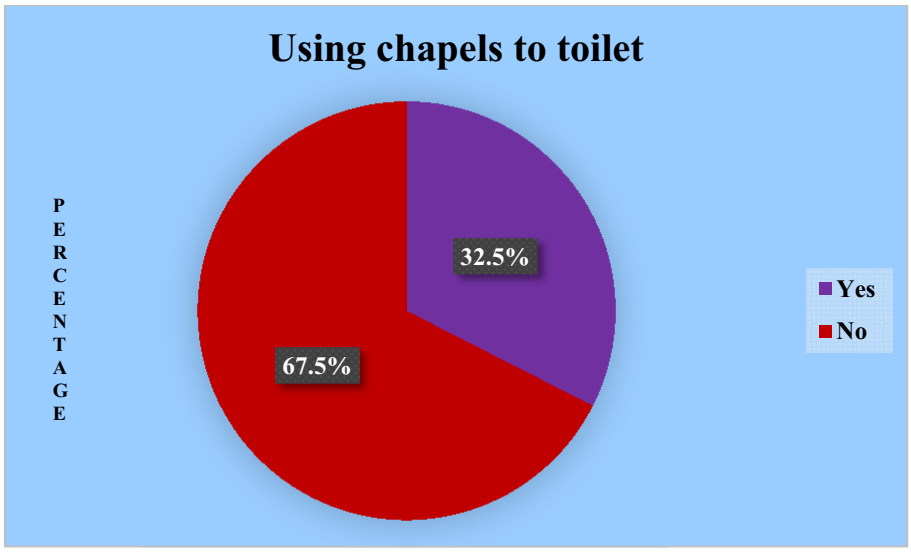


Figure 19. Distribution of using chapels to toilet among adolescent girls with anemia

Figure 20. Distribution of habit of hand washing among adolescent girls with anemia

SECTION II: PREVALENCE OF ANEMIA AMONG ADOLESCENT GIRLS WITH ANEMIA.

N = 82

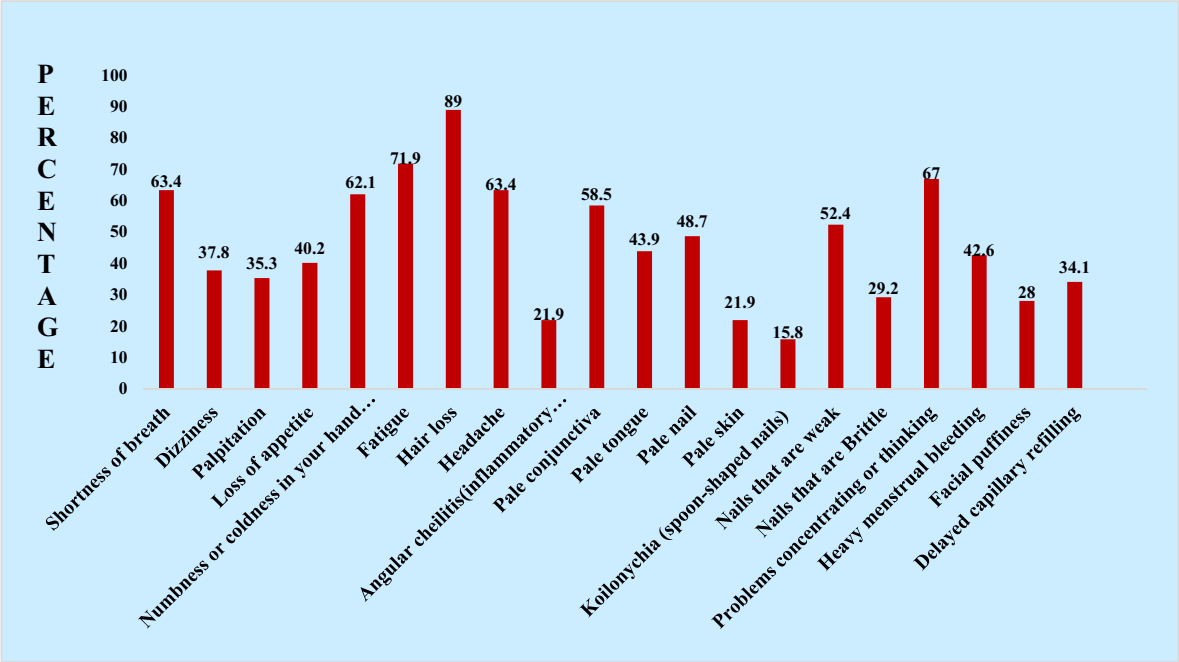


Figure 21. Distribution of prevalence of anemia among adolescent girls with anemia.

Figure 20 reveals that among the adolescent girls with anemia were assessed, the finding shows that all the adolescent girls were having the signs and symptoms from minimum 2 to maximum 18. Most of them 73 (89%) of them having the complaint of hair loss, 59 (71.9%) of them had fatigue, 55 (67%) of them having problems in concentrating and thinking, 52 (63.4%) of them had shortness of breath and headache,51 (62.1%) of them having numbness or coldness in your hand and feet. Few number of adolescent girls had the least complaints (i.e) 13 (15.5%) of them had Koilonychia (spoon-shaped nails) and 18 (21.9%) of them had Angular cheilitis (inflammatory lesions at the mouth's corners) as well as pale skin.

SECTION III: EFFECTIVENESS OF DRUMSTICK LEAVES JUICE ON LEVEL OF HAEMOGLOBIN AMONG ADOLESCENT GIRLS WITH ANEMIA .

Table 3.1 Distribution of the pre test level of haemoglobin among adolescent girls with anemia. **N = 40**

Level of Haemoglobin	MODERATE		MILD		NORMAL	
	N	%	N	%	N	%
Pre test	17	42.5	23	57.5	0	0
Post test	0	0	24	60	16	40

Table 3.1 acknowledge that among adolescent girls with anemia, 23 (57.5 %) had mild level of anemia and 17 (42.5 %) had moderate level of anemia in pre-test and 24 (60 %) had mild level of anemia and 16 (40 %) had no anemia in post-test.

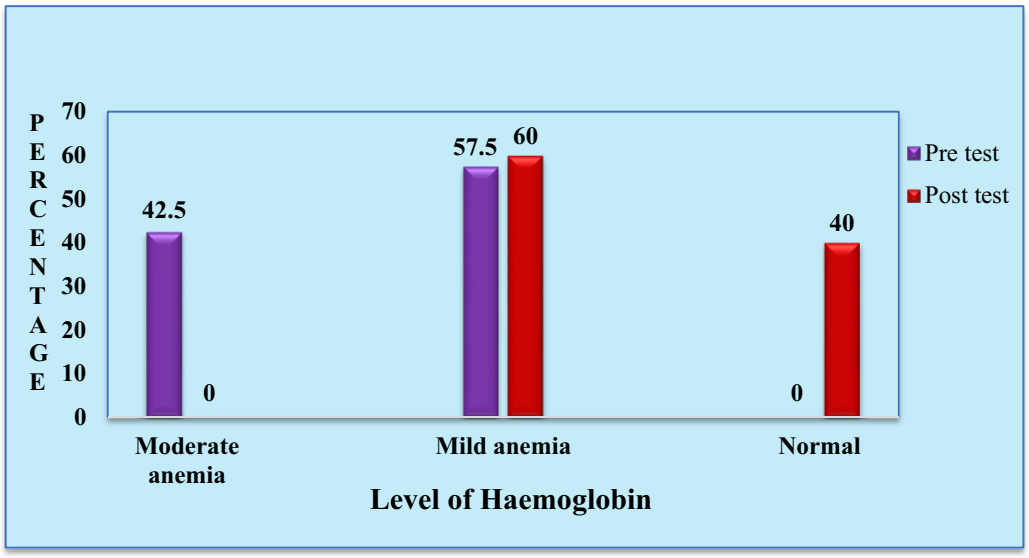


Figure 22 Distribution of pre test and post test level of haemoglobin level among adolescent girls with anemia.

Table 3.2 Mean score difference of pre and post test level of haemoglobin among adolescent girls with anemia. **N = 40**

Subjects	Pre test		Post test		MD
	Mean	SD	Mean	SD	
Over all	**10**	**1.08**	**11.7**	**0.62**	**1.7**

Table 3.2 explains that the mean score and standard deviation between pre and post-test level of haemoglobin among adolescent girls with anemia, the mean score was increased and the standard deviation score was decreased after the intervention of drumstick leaves juice. This shows that there is a significant difference between the mean score after the intervention.

Table 3.3 Paired 't' test on level of haemoglobin score among adolescent girls with anemia within pre and post intervention. N = 40

Subjects	Pre test		Post test		't' value
	Mean	SD	Mean	SD	
Overall	10	1.08	11.7	0.62	9.44*

- Significant at 0.01 level.

Table 3.3 reveals that the obtained "t" value was found to be extremely significant at the level of $p < 0.01$. It is inferred that the administration of the drumstick leaves juice for an adolescent girls with anemia had a significant increase in post test estimation of haemoglobin.

SECTION IV: TO FIND THE ASSOCIATION BETWEEN, THE POST TEST LEVEL OF HAEMOGLOBIN AMONG ADOLESCENT GIRLS WITH ANAEMIA WITH SELECTED DEMOGRAPHIC VARIABLES.

Table 4.1. Association between the post test level scores of haemoglobin with selected demographic variables among adolescent girls with anemia such as age and type of family. **N = 40**

S.No	Demographic variables	Normal		Mild		Chi square χ^2
		N	%	N	%	
1.	**Age**					
	A. 10 – 15	11	27.5	16	40	0.018 #
	B. 16 -19	5	12.5	8	20	
2.	**Type of family**					
	A. Nuclear	14	35	21	52.5	
	B. Joint	1	2.5	3	7.5	1.875 #
	C. Extended	1	2.5	0	0	

 # not significant in the level of <0.05

Table 4.1 presents the association between selected demographic variables with post test level of haemoglobin of adolescent girls with anemia. In regard to age, the χ^2 was 0.018 ($p<0.05$) which was not significant. With regards to type of family, the χ^2 was 1.875 ($p<0.05$) which was not significant.

Table 4.2. Association between the post test level scores of haemoglobin with selected demographic variables among adolescent girls with anemia such as total no of siblings, educational status of a father and educational status of a mother. N = 40

S.No	Demographic variables	Mild		Moderate		Chi square
		N	%	N	%	χ^2
3.	**Total No of siblings**					
	A. Below 2	14	35	19	47.5	0.46 #
	B. Above 2	2	5	5	12.5	
4.	**Educational status of a father**					
	A. Uneducated	7	17.5	9	22.5	
	B. Primary	2	5	4	10	0.327 #
	C. High School	6	15	10	25	
	D. Higher secondary	1	2.5	1	2.5	
5.	**Educational status of a mother**					
	A. Uneducated	7	17.5	11	27.5	
	B. Primary	1	2.5	1	2.5	10.36 #
	C. High school	6	15	11	15	
	D. Higher secondary	2	5	1	2.5	

 # not significant in the level of <0.05

Table 4.2 represents the association between selected demographic variables with post test level of haemoglobin of adolescent girls with anemia. Respecting the No of siblings, the χ^2 was 0.46 ($p<0.05$) which was not significant. In relation to the educational status of father, the χ^2 was 0.327 ($p<0.05$) which was not significant. About the educational status of mother, the χ^2 was 10.36 ($p<0.05$) which was not significant.

Table 4.3. Association between the post test level scores of haemoglobin with selected demographic variables among adolescent girls with anemia such as monthly income of the family and source of information. **N = 40**

S.No	Demographic variables	Mild		Moderate		Chi square
		N	%	N	%	χ^2
6.	**Monthly income of the family**					
	A. 1000 – 4000	15	37.5	20	50	
	B. 4001 – 8000	1	2.5	3	7.5	1.159 #
	C. 8001 – 12000	0	0	1	2.5	
	D. Above 12000	0	0	0	0	
7.	**Source of information**					
	A. Mass media	1	2.5	0	0	
	B. Books and magazine	6	15	6	15	
	C. Relatives and peer group	1	2.5	5	2.5	4.13 #
	D. Health personnel	4	10	4	10	
	E. Never heard	4	10	9	22.5	

 # not significant in the level of <0.05

Table 4.3 shows the association between selected demographic variables with post test level of haemoglobin of adolescent girls with anemia. As to the monthly income of the family, the χ^2 was 1.159 ($p<0.05$) which was not significant. In regard to the source of information, the χ^2 was 4.13 ($p<0.05$) which was not significant.

Table 4.4. Association between the post test level scores of haemoglobin with selected demographic variables among adolescent girls with anemia such as age at menarche, pattern of menstruation, flow of menstruation and days of menstruation. N = 40

S.No	Demographic variables	Mild		Moderate		Chi square χ^2
		N	%	N	%	
	MENSTRUAL HISTORY					
8.	**Age at menarche**					
	C. Below 13	7	17.5	8	20	0.443 #
	D. 13-17	9	22.5	16	40	
9.	**Pattern of menstruation**					
	C. Regular	5	12.5	11	27.5	0.85 #
	D. Irregular	11	27.5	13	32.5	
10.	**Flow of menstruation**					
	D. Normal	6	15	13	32.5	
	E. Heavy	8	20	8	20	1.226 #
	F. Scanty	2	5	3	7.5	
11.	**Days of menstruation**					
	D. 3 – 5 days	10	25	19	47.5	
	E. 6 – 8 days	6	15	5	12.5	1.335 #
	F. Above 8 days	0	0	0	0	

 # not significant in the level of <0.05

Table 4.2 reveals that the association between selected demographic variables with post test level of haemoglobin of adolescent girls with anemia. Regarding age at menarche, the χ^2 was 0.433 ($p<0.05$) which was not significant. About the pattern of menstruation, the χ^2 was 0.85 ($p<0.05$) which was not significant. Concerning the flow of menstruation, the χ^2 was 1.226 ($p<0.05$) which was not significant. With regards to the days of menstruation, the χ^2 was 1.335 ($p<0.05$) which was not significant.

Table 4.5. Association between the post test level scores of haemoglobin with selected demographic variables among adolescent girls with anemia such as type of diet and intake of beverages. N = 40

S.No	Demographic variables	Mild		Moderate		Chi square χ^2
		N	%	N	%	
	DIETARY PATTERN					
12.	**Type of diet**					
	C. Vegetarian	0	0	2	5	1.403 #
	D. Non vegetarian	16	40	22	55	
13.	**Intake of beverages coffee/tea/milk**					
	C. Yes	12	30	16	40	0.316 #
	D. No	4	10	8	20	

 # not significant in the level of <0.05

Table 4.5 affirm that the association between selected demographic variables with post test level of haemoglobin of adolescent girls with anemia. Regarding type of diet, the χ^2 was 1.403 ($p<0.05$) which was not significant. About the intake of beverages, the χ^2 was 0.316 ($p<0.05$) which was not significant.

Table 4.6. Association between the post test level scores of haemoglobin with selected demographic variables among adolescent girls with anemia such as history of worm infestation. **N = 40**

S. No	Demographic variables	Mild		Moderate		Chi square χ^2
		N	%	N	%	
14.	**HISTORY OF WORM INFESTATION** **Do you use chapels when you go to toilet**					
	C. Yes	4	10	9	22.5	0.712 #
	D. No	12	30	15	37.5	
15.	**Do you wash hands with soap and water after each defecation**					
	C. Yes	2	5	1	2.5	0.959 #
	D. No	14	35	23	57.5	

 # not significant in the level of <0.05

Table 4.6 represents the association between selected demographic variables with post test level of haemoglobin of adolescent girls with anemia. In relation to the use of chapels for toilet, the χ^2 was 0.712 ($p<0.05$) which was not significant. With regard to the hand washig , the χ^2 was 0.959 ($p<0.05$) which was not significant.

SECTION V: EXISTING KNOWLEDGE OF ADOLESCENT GIRLS ON ANEMIA.

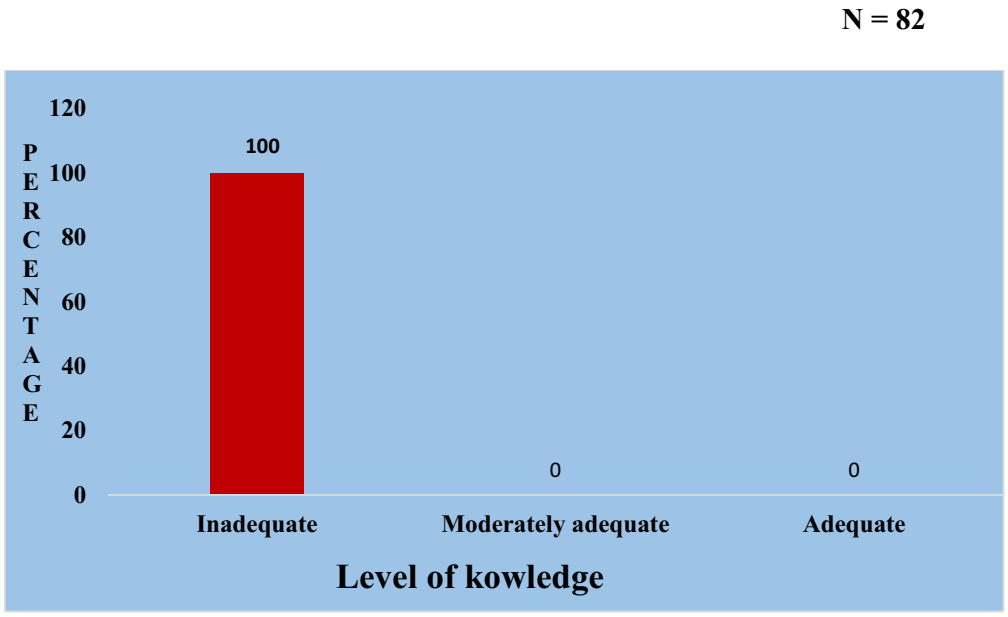


Figure 23 Distribution of pre test test level of knowledge on anemia among adolescent girls.

It states that all adolescent girls 82 (100%) had inadequate knowledge regarding anemia in the existing knowledge

CHAPTER - V

DISCUSSION

The aim of the present study was to evaluate the effectiveness of drumstick leaves juice among adolescent girls in the home of CSI girls higher secondary school, Pasumalai, Madurai. The study was conducted by using quasi experimental (one group pre test and post test) design. The adolescent girls with mild and moderate anemia was selected for this study. The sample size was 40 adolescent girls who are in the age group of 10 -19. The demographic variables, observational checklist and well-structured questionnaire was used to collect the data. The data was analysed through both descriptive statistics (mean, frequency percentage, and standard deviation) and inferential statistics (paired‘t’ test and $\chi 2$ test).

This study has been discussed based on the objectives

The first objective of this study was to assess the prevalence of anemia among adolescent girls in selected home at Madurai district.

The prevalence among the adolescent girls with anemia were assessed, the finding shows that all the adolescent girls were having the signs and symptoms from minimum 2 to maximum 18. Most of them 73 (89%) of them having the complaint of hair loss, 59 (71.9%)of them had fatigue, 55 (67%) of them having problems in concentrating and thinking, 52 (63.4%) of them had shortness of breath and headache,51 (62.1%) of them having numbness or coldness in your hand and feet. Few number of adolescent girls had the least complaints (i.e) 13 (15.5%) of them had Koilonychia (spoon-shaped nails) and 18 (21.9%) of them had Angular cheilitis (inflammatory lesions at the mouth's corners) as well as pale skin.

These findings were consistent with study done by Gowrikar et al. (2002) reported that the mean haemoglobin was 9.80 g/dl and overall prevalence of anemic was 96.5% in 459 girls of 10-18 years of age in Ujjain.

The another findings were supported by the study conducted by Chaudhary et al. (2008) conducted a cross sectional survey in an urban area under Urban Health Training Center, Department of Preventive and Social Medicine, Government Medical College and Hospital, Nagpur. A total of 296 adolescent females (10- 19 years old) were included in this study. The prevalence of anemia was found to be 35.1%.

The second objective of this study was to determine the effectiveness of drumstick leaves juice on level of haemoglobin among adolescent girls with anemia.

The pre test and post test level of haemoglobin among adolescent girls with anemia was found. In the level of haemoglobin among adolescent girls with anemia, 23 (57.5 %) had mild level of anemia and 17 (42.5 %) had moderate level of anemia in the pre-test and 24 (60 %) had mild level of anemia and 16 (40 %) had no anemia in the post-test.

Based on the objective, level of haemoglobin before administration of drumstick leaves juice is (Mean = 10, SD = 1.08) and the level of haemoglobin after administration of drumstick juice is (Mean = 11.7, SD = 0.62), the mean score was increased and the standard deviation score was decreased after the intervention of drumstick leaves juice. This shows that there is a significant difference between the mean score after the intervention. The obtained "t" 9.44 value was found to be extremely significant at the level of $p < 0.01$. It was observed that the administration of the drumstick leaves juice for an adolescent girls with anemia had a significant increase in post test estimation of haemoglobin. Hence, the hypothesis H_1 was accepted.

These findings were supported by the study conducted by Dr.Mangala Subramanian (2013) that a simple random sampling of 60 women suffering from IDA was taken where 30 women were assigned to the intervention group and 30 to the control group. The intervention group was then given a therapy which consisted of 100gm of Moringa oleifera and jaggery (dry weight) in a ratio of 80:20 for thirty days. The inhibitors of iron absorption (milk, phytates, and tannins) were not taken along with the supplements. After thirty days the haemoglobin levels were analysed again and recorded. At the end of the supplementation period (30 days), the women in intervention group showed an increase in haemoglobin level. By the Student's t test, the post intervention data is highly significant,t=4.109 (P <0.001).This study shows that Moringa oleifera with jaggery has significantly improved haemoglobin levels of anaemic women.

The third objective of this study was to find the association between, the post test level of haemoglobin among adolescent girls with anemia with selected demographic variables.

Regarding the association between the post- test level of haemoglobin among adolescent girls with selected demographic variables, the results revealed that there was no significant association between the level of haemoglobin with selected demographic variables like Age, educational status of Father, educational status of Mother, religion, type of family, no of siblings, monthly income of the family, source of information, menstrual history, dietary pattern and hygienic practices. Hence, the hypothesis H_2 was rejected. The investigator feels that the level of haemoglobin is not constrained by any of the demographic variables and it was decrease due to lifestyle modification in a person in their life.

The present study was consistent with the study conducted by Binay Kumar Shah, Piyush Gupta (2002) was conducted to determine the prevalence of anemia in adolescent

Nepalese girls in a semi urban setting. A total of 209 apparently healthy girls between the ages of 11-18 years were recruited and information collected on menarcheal status and socio-demographic profile. All girls were subjected to anthropometric examination and hematocrit estimation. Anemia was defined as hematocrit less than 36, as per WHO cut-off. The overall prevalence of anemia was found to be 68.8%. This prevalence was not related to girls' age, body mass index, menarcheal status, and socio-demographic factors including parental education or occupation ($p = 0.05$).

The fourth objective of this study was to implement the need based awareness programme on anemia among adolescent girls in selected home at Madurai district.

The level of knowledge of an adolescent girls on anemia before the need based awareness programme 82 (100%) was inadequate. The investigator feels that by assessing the existing knowledge, one can identify their previous exposure to anemia.

These findings were supported by the study conducted by Harshad Pate, Harsha Solanki, Vibha Gosalia, Falguni Vora, M. P. Singh (2013).In this study, when explored about anemia more than 50% were not aware about anemia, 92.6% young college girls were not having knowledge about its preventive & treatment measures.

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- www.informhealthcare.com.
- www.nrhmtn.gov.in
- www.who.int/../en/
- www.censusindia.gov.in/2011
- www.anemia.org/patients/feature

APPENDIX-I

AREA MAP

Main Study Area- CSI Girls Higher Secondary School, Pasumalai,Madurai

APPENDIX-II

Letter seeking permission to conduct pilot study

From,

Ms.M. Priyanka,
II Year M.Sc(N),
C.S.I Jeyaraj Annapackiam College of Nursing,
Pasumalai, Madurai-4.

To

The Headmistress,
LPN Girls Higher Sec School, K.Pudur,
Madurai- 4

Forwarded through,

Prof.Dr.C.Jothi Sophia, M.Sc(N)., Ph.D(N).,
Principal,
C.S.I.Jeyaraj Annapackiam College of Nursing,
Madurai.

Respected Sir/Madam,

Sub: Requisition to conduct the study - reg.

With due regards, I kindly bring to your valuable notice that, I am doing my post-graduation in nursing at C.S.I. Jeyaraj Annapackiam College of Nursing, Pasumalai, Madurai. I have selected the below mentioned topic for dissertation to be submitted to The Tamil Nadu Dr.M.G.R. Medical University, Chennai as a partial fulfillment of Master of Science in Nursing.

A study to evaluate the effectiveness of drumstick leaves juice in improving the haemoglobin level among adolescent girls with anemia in a selected School at Madurai district.

I have planned to do my study in your esteemed institution. So I humbly request you to give me permission to conduct the study for which I remain grateful.

Thanking You

Place: Pasumalai. Yours sincerely,

Date:

(M.Priyanka)

APPENDIX-III

Letter seeking permission to conduct research study

From,

Ms.M. Priyanka,
II Year M.Sc(N),
C.S.I Jeyaraj Annapackiam College of Nursing,
Pasumalai, Madurai-4.

To

The Headmistress,
CSI Girls Higher Sec School, Pasumalai
Madurai- 4

Forwarded through,

Prof.Dr.C.Jothi Sophia, M.Sc(N)., Ph.D(N).,
Principal,
C.S.I.Jeyaraj Annapackiam College of Nursing,
Madurai.

Respected Sir/Madam,

Sub: Requisition to conduct the study - reg.

With due regards, I kindly bring to your valuable notice that, I am doing my post-graduation in nursing at C.S.I. Jeyaraj Annapackiam College of Nursing, Pasumalai, Madurai. I have selected the below mentioned topic for dissertation to be submitted to The Tamil Nadu Dr.M.G.R. Medical University, Chennai as a partial fulfillment of Master of Science in Nursing.

A study to evaluate the effectiveness of drumstick leaves juice in improving the haemoglobin level among adolescent girls with anemia in a selected School at Madurai district.

I have planned to do my study in your esteemed institution. So I humbly request you to give me permission to conduct the study for which I remain grateful.

Thanking You

Place: Pasumalai. Yours sincerely,

Date:

(M.Priyanka)

APPENDIX-IV

Letter seeking permission for content validity

From

M.Priyanka

II year M.Sc (N) Student,

C.S.I. Jeyaraj Annapackiyam College of Nursing,

Madurai.

To

Respected sir,

Sub: Requisition for opinions and suggestions of experts for establishing content validity of research tool- reg,

With due regards, I kindly bring to your knowledge that I am a post graduate student of the C.S.I. Jeyaraj Annapackiyam College of Nursing, Madurai. I have selected the below mentioned topic for dissertation to be submitted to the Tamil Nadu Dr.M.G.R.Medical University, Chennai as a part of partial fulfilment of Master of Nursing Degree.

TOPIC: A study to evaluate the effectiveness of drumstick leaves juice to increase the haemoglobin level among adolescent girls with iron deficiency anemia in a selected School at Madurai district.

With regards I humbly request you to validate my study instruments. I will be grateful if you do this favour to me as early as possible.

Thanking you,

Date: Yours Sincerely,

Place: Madurai (M.Priyanka)

APPENDIX-V

CERTIFICATE OF TOOL VALIDATION

I hereby certify that I have validated the tool of Miss. M.Priyanka, who is undertaking the following study:

TOPIC: A study to evaluate the effectiveness of drumstick leaves juice to increase the haemoglobin level among adolescent girls with iron deficiency anemia in a selected School at Madurai district.

Signature of the expert:

Designation and Address:

Place:

Date:

APPENDIX-VI

INFORMED CONSENT

(IMPROVING THE LEVEL OF HAEMOGLOBIN AMONG ADOLESCENT GIRLS)

SAMPLE NO:_____

The investigator / Nurse explained to me in detail about the procedure on estimation of haemoglobin to reduce the level of anemia. I will be interviewed to collect information as part of a study to improve the level of haemoglobin to prevent anemia.

I agree / do not agree to be interviewed and to participate in the study.

I understand the following tests will be performed to check the haemoglobin level

Blood is collected from the side of the third or fourth left finger. Clean the site with spirit swab. Pierce the finger with sterile lancet firmly and rapidly. Wipe away the first drop of blood with cotton .Press the finger to produce a drop of blood.

The information thus obtained from the interview and the test will be kept confidential and will be used to evaluate the usefulness of these tests in improving the haemoglobin level. I understand that these procedures are generally harmless, but may cause occasionally some mild complications like bleeding or infection, which can be satisfactorily treated. I also understand that I will be advised appropriate treatment, (drumstick leaves juice for 15 days ,if the haemoglobin level is mild and moderate and medical treatment for severe anemia)

I hereby express my **willingness to participate** in this programme and to undergo the above tests and treatment, if advised* / I am **not willing to undergo** the above procedures*

Name: _____ signature _____

Address: _____

_____

Place: _____

Date : _____/_____/_____

*strike out whichever is not applicable.

APPENDIX-VII

ஒப்புதல் படிவம்

மாதிரி எண் _____

இரத்தசோகையின் ஆரம்ப நிலை அறிகுறிகள் மற்றும் இரத்தசோகை வராமல் தடுக்கும் முறைகள் குறித்து ஆய்வு மேற்கொள்ளுபவரால் (செவிலியர்) எனக்கு விளக்கம் அளிக்கப்பட்ட்து. இந்த ஆய்வின் மூலம் தகவல்களை என்னிடம் நேர்காணல் மூலம் பெற்றுக் கொள்வதினால் எனக்கு ஏற்படவிருக்கும் இரத்தசோகையின் நோய்க்கான ஆபத்தையும் அதனால் ஏற்படும் விளைவுகளையும் குறைக்க முடியும் என்பதை நம்புகிறேன்.

முருங்கைக்கீரைச் சாறு இரத்தசோகை நோய்க்காகவும், அதனை தடுக்கவும் பயன்படுத்தப்படும் என்பதையும் அறிந்து கொண்டேன். மேலும் மேற்கண்ட ஆய்வுகள் என் உடலுக்கு ஊறு விளைவிக்காதவை என்றும் அதனை திருப்த்திகரமாக சரி செய்து கொள்ள முடியும் என்பதை புரிந்து கொண்டேன்.எனக்கு ஏதேனும் குறைபாடுகள் இருப்பின் தகுந்த ஆலோசனைகளும், முறையான சிகிச்சைக்குப் பரிந்துரைக்கப்படுவேன் என நம்புகிறேன்.

ஆகவே, இந்த நிகழ்வில் பங்கெடுத்து எனக்கு வழங்கப்படும் ஆலோசனையின்படி ஆய்வுகளுக்கும், சிகிச்சைக்கும் நான் என் முழு மனதுடன்

சம்மதிக்கிறேன் */ சம்மதிக்கவில்லை

பெயர்: _____

விலாசம்:_____ கையொப்பம்

இடம்: _____

தேதி: _____

*தேவையானதை தெரிவு செய்யவும்

APPENDIX-VIII

Pre test level of haemoglobin

VIGNASH LAB



List of Haemoglobin level between 7-11.9 gms/dl of CSI Girls Hr Sec School Pasumalai

S.N	NAME	HB	UNITS
1	AbinayaSundari	10.2	Gms/dl
2	Preethika Lakshmi	9.0	Gms/dl
3	J. Shiva ranjini	11.0	Gms/dl
4	Pavithradevi	11.7	Gms/dl
5	Abirami	11.1	Gms/dl
6	R. Kalpana	10.2	Gms/dl
7	P.Rajalakshmi	8.5	Gms/dl
8	A.Sarvares Rani	10	Gms/dl
9	R. Vishnupriya	10.9	Gms/dl
10	S.Vashugidevi	10.2	Gms/dl
11	Kaleeshwari	8.8	Gms/dl
12	Hemalatha	10.8	Gms/dl
13	Gayathri	10.9	Gms/dl
14	Ramya	9.8	Gms/dl
15	R.Alagammal	8.8	Gms/dl
16	Latha Lakshmi	9.8	Gms/dl
17	S.Kaleeshwari	9.9	Gms/dl
18	Kamachidevi	8.3	Gms/dl
19	A.Swetha	9.0	Gms/dl
20	R.Banupriya	8.8	Gms/dl
21	N.Divya	11.2	Gms/dl
22	Monisha	10.5	Gms/dl
23	Dhanalakshmi	10.6	Gms/dl
24	Thangathai	9.1	Gms/dl
25	K.Kalaiselvi	10.5	Gms/dl
26	Nila	9.7	Gms/dl
27	Aarthi	10.3	Gms/dl
28	Nithya	10.7	Gms/dl
29	Reshma	7.2	Gms/dl
30	Aruna	7.1	Gms/dl
31	S.Alazhumeena	11.8	Gms/dl
32	Mathumathi	10.9	Gms/dl
33	Priya	9.7	Gms/dl
34	Yoga	10.9	Gms/dl
35	Mohanapriya	11.3	Gms/dl
36	Meenatchi	9.8	Gms/dl
37	V.Nagalakshmi	11.2	Gms/dl
38	Anandhi	11.2	Gms/dl
39	Kanimozhi	10.2	Gms/dl
40	Vanaselvi	11.3	Gms/dl

Lab Technician *Microbiologist* *Lab In-charge*

The values are provided as a guidance for medical professionals only. The values will vary from one Laboratory to another. Laboratory reports shoud not be interpreted in isolation. They should always be correlated with Clinical findings and other medical reports.

VIGNASH CLINICAL LABORATORY
DHANVANTRI COMPLEX, 130-A, Balaji Street, Alagappan Nagar, Madurai - 625 003.
Off : 0452 - 2692297 Mobile : 98420 74404

ECG & X-Rays Attached
ROUND THE CLOCK SERVICE

APPENDIX-IX

Post test level of haemoglobin

VIGNASH LAB

S.NO	NAME	VALUE	UNITS
1	Miss.Abinayasundari	10.6	Gms/dl
2	Miss.Prithikalakshmi	11.4	Gms/dl
3	Miss.Sivaranjini	11.4	Gms/dl
4	Miss.Pavithradevi	12.1	Gms/dl
5	Miss.Abirami	12.0	Gms/dl
6	Miss.Kalapana	11.9	Gms/dl
7	Miss.P.Rajalakshmi	11.7	Gms/dl
8	Miss.Savareshrani	11.3	Gms/dl
9	Miss. Vishnupriya	12.1	Gms/dl
10	Miss. Vasukidevi	10.7	Gms/dl
11	Miss. R.Kaleeswari	12.4	Gms/dl
12	Miss.Hemalatha	12.6	Gms/dl
13	Miss. Gayathri	11.5	Gms/dl
14	Miss. Ramya	12.6	Gms/dl
15	Miss. Alagammal	11.9	Gms/dl
16	Miss. Lathalakshmi	10.2	Gms/dl
17	Miss.S.Kaleeswari	12.4	Gms/dl
18	Miss. Kamatchidevi	10.9	Gms/dl
19	Miss.Swetha	11.5	Gms/dl
20	Miss. Banupriya	12.6	Gms/dl
21	Miss.Divya	12.2	Gms/dl
22	Miss. Monisha	12.4	Gms/dl
23	Miss.Dhanalakshmi	12.6	Gms/dl
24	Miss.Thangathai	11.7	Gms/dl
25	Miss.Kalaiselvi	11.3	Gms/dl
26	Miss. Nila	10.8	Gms/dl
27	Miss. Arthy	10.8	Gms/dl
28	Miss.Nithya	12.2	Gms/dl
29	Miss.Reshma	10.8	Gms/dl
30	Miss.Aruna	11.9	Gms/dl
31	Miss.Alagumeena	11.2	Gms/dl
32	Miss.Mathumathi	11.7	Gms/dl
33	Miss.Priya	11.7	Gms/dl
34	Miss.Yoga	12.4	Gms/dl
35	Miss.Mohanapriya	11.9	Gms/dl
36	Miss.Meenachi	12.2	Gms/dl
37	Miss.Nagalakshmi	11.7	Gms/dl
38	Miss.Ananthi	12.5	Gms/dl
39	Miss.Kanimozhli	11.7	Gms/dl
40	Miss.Vanaselvi	12.1	Gms/dl

Lab Technician *Microbiologist* *Lab In-Charge*

The values are provided as a guidance for medical professionals only. The values will vary from one Laboratory to another. Laboratory reports should not be interpreted in isolation. They should always be correlated with Clinical findings and other medical reports.

VIGNASH CLINICAL LABORATORY
DHANVANTRI COMPLEX, 130-A, Balaji Street, Alagappan Nagar, Madurai - 625 003.
Off : 0452 - 2692297 Mobile : 98420 74404

ECG & X-Rays Attached
ROUND THE CLOCK SERVICE

APPENDIX – X

LIST OF EXPERTS

1. **DR. A. MUNAWAR KHAN M.B.B.S., FCIP., FISCD., MIPHA.,B.S.Sc.,**

   Member of Indian Epidemiologist Association (NICD, New Delhi)

   Former Associate Professor, Institute of Community Medicine,

   Madras Medical College,Chennai-3

   Member, Global Society for Health promotion and Education,Bangalore-23

   Former Director of Public Health and Preventive Medicine, GOVT. Of. T.N

   Former Director GIRH and FWT, Ambathurai, Gandhigram.

2. **Prof.Dr.Mrs. Merlin Jeyapaul. M.Sc(N)., Ph.D.,**

   Vice Principal

   CSI Jeyaraj Annapackiam College of Nursing

   Madurai.

3. **Prof.Dr. John Sam Arun Prabu. M.Sc(N)., Ph.D.,**

   HOD of Community Health Nursing

   CSI Jeyaraj Annapackiam College of Nursing

   Madurai.

4. **Mrs. Shanthi. M.Sc (N).,**

   Professor

   HOD of Obstetrics and Gynecology department

   CSI Jeyaraj Annapackiam College of Nursing

   Madurai.

5. **Prof. Dr. Mrs. Celina. M.Sc(N)., Ph.D.,**

   Vice Principal

   Omayalachi College of Nursing

   Chennai.

6. **Mrs. Sharmila. M.Sc (N).,**

   HOD of Community Health Nursing

   Child Jesus College of Nursing

   Tuticorin.

7. **Mr.Krishna Moorthy. M.Sc (N).,**

   Lecturer of Community Health Nursing

   E.S College of Nursing

   Villupuram

8. **Prof.Mr. Edwin Rajkumar. M.A (Socio).,MSW.,**

   Department of Sociology

   CSI Jeyaraj Annapackiam College of Nursing

   Madurai.

9. **Mrs. Vedha Selvi.**

   Lecturer of Community Health Nursing

   CSI Jeyaraj Annapackiam College of Nursing

   Madurai.

10. **Mr. Jeya Balan M.Sc (N).,**

    Lecturer of Community Health Nursing

    CSI Jeyaraj Annapackiam College of Nursing

    Madurai.

11. **Mr. Jewel Joseph M.Sc (N).,**

    Program Officer

    JHPIEGO Corporation

    Jaipur

12. **Mr. Mani M.Sc., M.Phil.,**

    Statistician.

    Aravind Eye Hospital,

    Madurai.

APPENDIX-XI

TOOL FOR DATA COLLECTION

PART I

INSTRUCTION:

The interviewer is directed to ask questions one by one. According to the response given by the respondent, the interviewer should place a tick mark on the answer.

DEMOGRAPHIC DATA Sample No:_____

1. Age _____
2. Religion
   - A. Hindu
   - B. Christian
   - C. Muslim
   - D. Others
3. Type of family
   - A. Nuclear
   - B. Joint
   - C. Extended
4. Total family members _____
5. Fathers education
   - A. Uneducated
   - B. Primary school
   - C. High school
   - D. Higher secondary
   - E. Graduate
6. Mothers education
   - A. Uneducated
   - B. Primary school
   - C. High school
   - D. Higher secondary
   - E. Graduate
7. Monthly income of the family
   - A. 1000- 4000
   - B. 4001- 8000
   - C. 8001-12000
   - D. Above 12000
8. Source of information regarding prevention of anemia
   - A. Mass media
   - B. Books and magazine
   - C. Relatives and Peer group
   - D. Health personnel
   - E. Never heard

MENSTRUAL HISTORY

9. Age at Menarche _____
10. Pattern of menstruation
    - A. Regular
    - B. Irregular
11. Flow of Menstruation
    - A. Normal
    - C. Scanty
    - B. Heavy
12. Days of menstruation
    - A. 3- 5 days
    - C. Above 8 days
    - B. 6- 8 days

DIETARY PATTERN

13. Type of diet
    - A. Vegetarian
    - B. Mixed vegetarian
14. Intake of beverages Coffee/ Tea/ milk
    - A. Yes
    - B. No

HISTORY OF WORM INFESTATION

15. Have you done deworming before
    - A. Yes
    - B. No
16. How often you will do deworming _____
17. Do you use chapels when you go to toilet
    - A. Yes
    - B. No
18. Do you wash hands with soap and water after each defecation
    - A. Yes
    - B. No

PART II

OBSERVATIONAL CHECK LIST TO IDENTIFY ANEMIA

S.NO	CLINICAL SYMPTOMS	PRESENT	ABSENT
1	Shortness of breath		
2	Dizziness		
3	Palpitation		
4	Loss of appetite		
5	Numbness or coldness in your hand and feet		
6	Fatigue		
7	Hair loss		
8	Headache		
9	Angular cheilitis(inflammatory lesions at the mouth's corners)		
10	Pale conjunctiva		
11	Pale tongue		
12	Pale nail		
13	Pale skin		
14	Koilonychia (spoon-shaped nails)		
15	Nails that are weak		
16	Nails that are Brittle		
17	Problems concentrating or thinking		
18	Heavy menstrual bleeding		
19	Facial puffiness		
20	Delayed capillary refilling		

PART III

BIO CHEMICAL TEST

LEVEL OF HAEMOGLOBIN

SAMPLE NO	PRE- TEST	POST TEST

PART IV

WELL STRUCTURED QUESTIONNAIRE TO ASSESS THE KNOWLEDGE AMONG ADOLESCENTS REGARDING ANEMIA.

GENERAL

1. What is anemia
    A. Decreased number of red blood cells
    B. Decreased amount of HB in the blood
    C. Lowered ability of the blood to carry oxygen
    D. Don't know
2. What is the normal range of haemoglobin level for female
    A. 12-15 g/dl
    B. Don't know
3. Which age group will be get affected with anemia commonly
    A. Infants
    B. Pre schoolars
    C. Adolescents
    D. Pregnant
    E. Don't know
4. What is meant by iron deficiency anemia
    A. Insufficient iron
    B. Inability to absorb enough iron from food
    C. Don't know
5. Normal iron intake of an adolescent girl for a day
    A. 15 mg
    B. Don't know
6. What are the Government programmes launched for anemia in India
    A. WIFS (Weekly Iron and Folic acid Supplementation)
    B. National nutritional anemia prophylaxis programme
    C. Don't know

7. What is the programme launched for anemia in Tamil Nadu

    A. Adolescent Anemia control programme

    B. Don't know

RISK FACTORS AND CAUSES

8. What are the risk factors of iron deficiency anemia

    A. Women with excessive bleeding

    B. Infants and children with worm infestation

    C. Vegetarians

    D. Frequent blood donors

    E. Don't know

9. What is the main cause for anemia

    A. Blood loss

    B. Lack of red blood cell production

    C. Increased RBC destruction

    D. Don't know

SIGNS AND SYMPTOMS

10. What is the major signs and symptoms of anemia

    A. Tiredness and lethargy (lack of energy)

    B. Shortness of breath

    E. Spoon shaped nail

    G. Delayed capillary refilling

    H. Don't know

    C. Heart palpitations (noticeable heartbeats)

    D. Heavy Menstrual bleeding

    F. A pale complexion

11. Mention the minor signs and symptoms of anemia

A. Dizziness
B. Headache
C. Lack of concentration
D. Loss of appetite
F. Hair loss
E. Angular cheilitis
G. Weak nail
H. Brittle nail
I. Numbness or coldness in your hand and feet
J. Don't know

DIAGNOSTIC EVALUATION

12. What test is prefer to determine the anemia

A. Haemoglobin
C. Haematocrit test
B. Complete RBC test
D. Serum ferritin
E. Don't know

MANAGEMENT AND PREVENTION

13. Mention the medical treatment measures for anemia

A. Iron supplementation
C. Vitamin C
B. Folic acids
D. Don't know

14. What is the medical treatment for severe anemia

A. Blood transfusion
C. Surgery
B. Blood and marrow stem cell transplant
D. Don't know

15. Which vitamin enhances iron absorption

A. Vitamin A
C. Don't know
B. Vitamin C

16. What should be avoided while taking iron supplements

A. Tannins
B. Phytates
C. milk
D. Don't know

17. What sources are rich in Tannins

A. Tea
B. Coffee
C. Grapes
D. Don't know

18. What contents are rich in Phytates

A. whole-grain wheat
B. legumes
C. Nuts
D. Don't know

19. What is the common iron rich sources

A. Dates
B. Jaggery
C. Pomegranate
D. Chickoo
E. Figs Fruit
F. Sesame seeds
G. Mint
H. Dried fruit
I. Berries
J. Don't know

20. What is the common vegetarian dietary sources of iron

A. Green leafy vegetables
B. Drumstick leaves
C. Spinach
D. Don't know

21. What is the common non-vegetarian dietary sources of iron

A. Meat
B. Liver
C. Fish
D. Don't know

22. Mention the preventive measures for anemia

A. Iron rich diet
B. Vitamin C rich diet
C. Using iron pots and pans for cooking
D. Don't know

COMPLICATION

23. What is the complication of anemia

A. Heart problems
B. Infertility
C. Menstrual irregularity
D. Problems during pregnancy
E. Don’t know

APPENDIX-XII

பகுதி – அ

பின்னணி விபரம்

கல்லூரி மாணவியர் பற்றிய விபரம்

மாதிரி

எண்:_____

1. வயது _____
2. மதம்

அ. இந்து இ. முஸ்லிம்

ஆ. கிறிஸ்தவர் ஈ. மற்றவை

3. குடும்பத்தின் வகை

அ. தனி குடும்பம் இ. விரிவுபடுத்தப் பட்ட குடும்பம்

ஆ. கூட்டுக் குடும்பம்

4. உடன் பிறந்தோரின் எண்ணிக்கை _____
5. தந்தையின் கல்வி நிலை

அ. படிக்கவில்லை ஈ. மேல் நிலைக் கல்வி

ஆ. நடு நிலைக் கல்வி உ. பட்டப்படிப்பு

இ. உயர் நிலைக் கல்வி

6. தாயின் கல்வி நிலை

அ. படிக்கவில்லை இ. உயர் நிலைக் கல்வி

ஆ. நடு நிலைக் கல்வி ஈ. மேல் நிலைக் கல்வி

உ. பட்டப்படிப்பு

7. குடும்பத்தின் மாத வருமானம்

அ. ரூ.1000- 4000 இ. ரூ.8001- 12000

ஆ. ரூ.4001- 8000 ஈ. ரூ.12000 மேல்

8. இரத்த சோகையைப் பற்றி எதன் வாயிலாக அறிந்து கொண்டீர்கள்

அ. தொலைக்காட்சி/ வானொலி

ஆ.புத்தகம் மற்றும் பத்திரிகை

இ. உறவினர் மற்றும் அருகிலிருப்பவர்கள்

ஈ. உடல் நலத்துறை சார்ந்தவர்கள்

உ. அறிந்ததில்லை

மாதவிடாய் பற்றிய விபரம்

9. பூப்படைந்த வயது

10. மாதவிடாயின் முறை

அ. முறையான

ஆ. முறையற்ற

11. மாதவிடாய் போக்கின் அளவு

அ. சரியான அளவு

ஆ. அதிகளவு

இ. குறைந்த அளவு

12. மாதவிடாயின் நாட்கள்

அ. 3- 5 நாட்கள்

ஆ. 6- 8 நாட்கள்

இ. 8 நாட்களுக்கு மேல்

உணவு முறை

13. உணவு பழக்கம்

A. சைவம்

B. கலப்பு

14. காபி/ டீ/ பால் எடுக்கும் பழக்கம் உண்டா?

அ. ஆம்

ஆ.இல்லை

புழுத்தாக்கம் பற்றிய விவரம்

15. இதற்கு முன் புழுத்தாக்கத்திற்க்கு மருந்து எடுத்துள்ளீர்களா?
    அ. ஆம் ஆ.இல்லை
16. எத்தனை மாதத்திற்க்கு ஒரு முறை புழுத்தாக்கத்திற்க்கு மருந்து எடுத்துள்ளீர்கள்?
17. பாத்ரூம் போகும் போது காலணி அணியும் பழக்கம் உள்ளதா?
    அ) ஆம் ஆ) இல்லை
18. ஒவ்வொரு முறை பாத்ரூமிற்கு சென்று வந்த பிறகும் கைகளை சோப்பு மற்றும் தண்ணீர் வைத்து கழுவும் பழக்கம் உள்ளதா?
    அ. ஆம் ஆ.இல்லை

பகுதி ஆ

இரத்தசோகை அடையாளம் கண்காணிப்பு சரிபார்ப்பு பட்டியல்

வ.எண்	மருத்துவ அறிகுறிகள்	ஆம்	இல்லை
1	மூச்சுதிணறல்		
2	மயக்கம்		
3	படபடப்பு		
4	பசியின்மை		
5	கை மற்றும் கால்களில் மதமதப்பு மற்றும் குளிர்		
6	உடல் சோர்வு		
7	முடிஉதிர்தல்		
8	தலைவலி		
9	கோண உதட்டழற்சி (வாயின் ஓரங்களில் அழற்சி)		
10	வெளிரிய கண்		
11	வெளிரிய நாக்கு		
12	வெளிரிய நகம்		
13	வெளிரிய தோல்		
14	ஸ்பூன் வடிவ நகம்		
15	பெலவீனமான நகம்		
16	உடைந்த நகம்		
17	கவனம் செலுத்த இயலாமை		
18	அதிகளவு மாதவிடாய் போக்கு		
19	வீங்கிய முகத்தோற்றம்		
20	தாமதமாக இரத்தநாளங்களுக்கு இரத்தம் திரும்புதல்		

பகுதி இ

உயிர் இரசாயன சோதனை

ஹீமோகுளோபின் அளவு

மாதிரி எண்	முன் சோதனை	பின் சோதனை

பகுதி ஈ

இரத்த சோகை பற்றியதான அறிவுக் கூர்மை படிவம்

பொதுவானவை

1. இரத்த சோகை என்பது என்ன

அ. குறைந்த அளவு இரத்த சிவப்பணுக்கள்

ஆ. இரத்தத்தில் குறைந்த அளவு ஹீமோகுளோபின்

இ. இரத்தத்திற்க்கு ஆக்ஸிஜனை எடுத்துச் செல்லும் திறன் குறைந்து காணப்படுதல்

ஈ. தெரியவில்லை

2. பெண்களின் சரியான ஹீமோகுளோபின் அளவு

அ. 12-15 கி/ டெ.லி ஆ. தெரியவில்லை

3. எந்த வயதினருக்கு இரத்த சோகை பாதிப்பு ஏற்பட வாய்ப்பு உள்ளது

அ. ஒரு மாத குழந்தை ஈ. கர்ப்பிணி பெண்

ஆ. முன் பள்ளி பருவம் உ. தெரியவில்லை

இ. வாலிபப் பருவம்

4. இரும்புச் சத்து குறைவினால் ஏற்படும் இரத்தசோகை என்றால் என்ன

A. இரும்புச் சத்து குறைபாடு
B. தேவையான அளவு இரும்புச் சத்து உணவில் இருந்து எடுத்துக் கொள்ள படாமை
C. தெரியவில்லை

5. ஒரு நாளைக்கு உணவில் சேர்த்துக் கொள்ள வேண்டிய இரும்புச் சத்தின் அளவு

அ. 15 மிகி

ஆ. தெரியவில்லை

6. நமது இந்திய அரசு இரத்தசோகைக்காக நிறுவப்பட்டுள்ள திட்டங்கள் என்ன

அ. வாரத்திற்க்கு ஒருமுறை இரும்பு மற்றும் ∴போலிக் அசிட் கொடுத்தல்

ஆ. தேசிய ஊட்டச்சத்து இரத்தசோகை நோய் தடுப்பு மருந்தாக திட்டம்

இ. தெரியவில்லை

7. தமிழ்நாட்டில் இரத்தசோகைக்காக நிறுவப்பட்டுள்ள திட்டங்கள் என்ன

அ.இரத்தசோகையை கட்டுப்படுத்தும் திட்டம்
ஆ.தெரியவில்லை

காரணங்கள்

8. எந்தெந்த காரணங்களால் இரும்புச் சத்துக் குறைபாட்டினால் ஏற்படும் இரத்தசோகை வருகிறது

அ. பெண்களுக்கு அதிக அளவில் இரத்தபோக்கு ஏற்ப்படுதல்

ஆ. 5 வயதிற்கு உட்பட்ட குழந்தைகளுக்கு (புழுத்தாக்கம்)

இ. சைவ உணவு உண்பவர்களுக்கு

ஈ. அடிக்கடி இரத்த தானம் செய்பவர்களுக்கு

உ. தெரியவில்லை

9. இரத்தசோகை ஏற்பட முக்கிய காரணம் என்ன

அ. இரத்த இழப்பு

ஆ. இரத்த சிவப்பணுக்கள் குறைவாக உற்பத்தி செய்யப்படுதல்

இ. அதிக அளவில் இரத்த சிவப்பணுக்கள் அழிதல்

ஈ. தெரியவில்லை

அறிகுறிகள்

10. இரத்தசோகையினால் அதிக அளவில் ஏற்ப்படும் அறிகுறிகள் எவை

அ. சோர்வடைதல்

ஆ. மூச்சுதிணறல்

இ. படபடப்பு

ஈ. அதிகளவு மாதவிடாய் போக்கு

உ. ஸ்பூன் வடிவ நகம்

ஊ. வெளிரிய நிறம்

எ. தாமதமாக இரத்தநாளங்களுக்கு இரத்தம் திரும்புதல்

ஏ. தெரியவில்லை

11. இரத்தசோகையினால் குறைந்த அளவில் ஏற்ப்படும் அறிகுறிகள் எவை

அ. மயக்கம்

ஆ. தலைவலி

இ. கவனம் செலுத்த இயலாமை

ஈ. பசியின்மை

உ. கோண உதட்டழற்சி (வாயின் ஓரங்களில் அழற்சி)

ஊ. முடி உதிர்தல்

எ. பெலவீனமான நகம்

ஏ. உடைந்த நகம்

ஐ. கை மற்றும் கால்களில் மதமதப்பு மற்றும் குளிர்

ஒ. தெரியவில்லை

பரிசோதனை முறை

12. எந்த வகையான பரிசோதனை இரத்தசோகையினை கண்டறிய உதவுகிறது

அ. ஹிமோகுளோபின்

ஆ. முழு இரத்த சிவப்பணுக்கள் பரிசோதனை

இ. ஹெமட்டோகிரிட் பரிசோதனை

ஈ. சீரம் ஃபரட்டின்

உ. தெரியவில்லை

சிகிச்சை முறை மற்றும் தடுப்பு முறை

13. இரத்தசோகையை சரிசெய்ய எந்த மருத்துவ முறை பயன்படுத்தப்படுகிறது

அ. இரும்புச் சத்து மாத்திரைகள்

ஆ. ஃபோலிக் ஆசிட் மாத்திரைகள்

இ. வைட்டமின் சி மாத்திரைகள்

ஈ. தெரியவில்லை

14. அதிகளவு இரத்தசோகை உள்ளவர்களுக்கு பயன்படுத்தப்படும் மருத்துவமுறை

அ. இரத்தம் ஏற்றுதல்

இ. அறுவை சிகிச்சை

ஆ. எலும்பு மஜ்ஜை பரிமாற்றம் செய்தல்

ஈ. தெரியவில்லை

15. எந்த வைட்டமின் அதிகளவு இரும்புச் சத்தை எடுத்துக் கொள்ள உதவுகிறது

அ. வைட்டமின் எ

இ. தெரியவில்லை

ஆ. வைட்டமின் சி

16. இரும்புச் சத்தினை எடுத்துக் கொள்ளும் போது எந்த உணவுப் பொருட்களை தவிர்க்க வேண்டும்

அ. டானின்

ஆ. ஃப்யட்டேட்ஸ்

இ. பால்

ஈ. தெரியவில்லை

17. எந்த வகையான உணவுகளில் டானின் அதிகமாக உள்ளது

அ. டீ

இ. திராட்சை

ஆ. காபி

ஈ. தெரியவில்லை

18. எந்த வகையான உணவுகளில் ஃப்யட்டேட்ஸ் அதிகமாக உள்ளது

அ. வாற்கோதுமை

இ. கொட்டைகள்

ஆ. பருப்பு வகைகள்

ஈ. தெரியவில்லை

19. பொதுவாக எந்த உணவுகளில் இரும்புச் சத்து அதிகம் உள்ளது

அ. பேரிச்சை

ஊ. எல்லு

ஆ. வெள்ளம்

எ. புதினா

இ. மாதுளை

ஏ. உலர்ந்த பழங்கள்

ஈ. சப்போட்டா

ஐ. பெர்ரி

உ. அத்தி பழம்

ஒ. தெரியவில்லை

20. எந்த சைவ உணவில் இரும்புச் சத்து அதிகம் உள்ளது

அ. பச்சைக் காய்கறிகள்

இ. பசலி கீரை

ஆ. முருங்கைக் கீரை

ஈ. தெரியவில்லை

21. எந்த அசைவ உணவில் இரும்புச் சத்து அதிகம் உள்ளது

அ. இறைச்சி

இ. மீன்

ஆ. ஈரல்

ஈ. தெரியவில்லை

22. இரத்தசோகை ஏற்படுவதை தடுக்கும் முறைகள்

அ. இரும்புச் சத்து நிறைந்த உணவுகள்

ஆ. வைட்டமின் சி நிறைந்த உணவுகள்

இ. இரும்பு பாத்திரங்கள் மற்றும் பானைகளை சமைக்க பயன் படுத்துதல்

ஈ. தெரியவில்லை

விளைவுகள்

23. இரத்தசோகையின் விளைவுகள் என்ன

அ. இருதய நோய்

ஆ. கர்ப்பக்காலத்தில் பிரச்சனை ஏற்படுதல்

இ. மலட்டுத்தன்மை

ஈ. முறையற்ற மாதவிடாய்

உ. தெரியவில்லை

APPENDIX-XIII

Importance of Drumstick leaves juice

"The miracle tree" Moringa oleifera is the tree from which the drumsticks (popularly called 'sahjan') is obtained have been used for culinary purposes, immense nutritional benefits and use in traditional medicine. The nutritional value of Sahjan is well established now and it has become a promising food for developing countries to prevent anemia and where malnutrition is prevalent.

Nutrition Value of Drumsticks

The tree of life, Moringa or drum stick tree is considered to be the most nutrient rich plant on earth. Drum stick is a tree that is extremely nutritious and has many potential and healthy uses.

In a gram per gram comparison:

Drumstick ≡ 7 times Vitamin C in oranges + 4 times Vitamin A in carrots + 4 times Calcium in milk + 3 times Potassium in banana + 2 times Protein in yoghurt + 4 times Fiber of oats + 9 times Iron of spinach!

Drumstick has emerged as a valuable food resource to prevent anemia, malnutrition and other childhood diseases such as childhood blindness associated with vitamin deficiency, diabetes, blood sugar, viral infections, and endless diseases which result from lack of nutritional elements in the diet. All parts of the plant are edible and the content of minerals, protein and vitamins is outstanding.

It is loaded with nutrients, oxidants and healthy proteins. The various constituents present in it are:

- Proteins
- Vitamin A
- Vitamin B complex
- Vitamin C
- Vitamin E
- Iron
- Calcium
- Potassium
- Magnesium
- Phosphorus
- Sulphur
- Zinc
- Selenium
- Copper
- Essential amino acids

Preparation of Drumstick Leaves Juice

1. Pluck a few branches from the Murungai Maram – Drumstick Tree.
2. Wash and rinse the leaves in plain water.
3. Boil plain water in a vessel. (1 kg drumstick leaves with 4.5 litre water)
4. Put the leaves in boiling water. Boiling will stop.
5. Strain the leaves and throw the leaves away.
6. Do not add any salt or sugar or any other item to the essence.
7. Add 2 drops of lemon juice for every 100 ml of juice for the easy absorption.

The warm essence of drumstick leaves is ready for you to drink and enjoy the taste.

Generally Murungai Leaves are readily available in most localities. If the leaves are tender, the colour of the drink is pale yellow, if the leaves are more mature, then the colour is dark yellowish green. The drink is refreshing, tasty and very healthy.

Drumstick (Leaves) Nutritive value:

Food Value

Minerals and Vitamins

Moisture - 75.9%

Calcium - 440 mg

Protein - 6.7%

Phosphorus - 70 mg

Fat - 1.7%

Iron - 7 mg

Vitamin C - 220 mg

Fibre - 0.9%

Small amount of Vitamin B Complex

Minerals - 2.3%

* Values per 100 gm's edible portion

Carbohydrates - 12.57%

Calorific Value - 92

APPENDIX-XIV

Snap shots

Data collection

Monitoring the level of haemoglobin

Drumstick leaves juice

Students were taking drumstick leaves juice

APPENDIX-XV

Pamphlet on anemia

சிகிச்சை முறை

- மருத்துவரை எடுத்தல்
- மருத்துவ ஆலோசனை

இரும்புச் சத்து நிறைந்த உணவுகள்

- பேரிச்சை
- வெல்லம்
- சேம்பரத்த
- சப்போட்டா

- பச்சை காய் கறிகள்
- முருங்கைக் கீரை

- இறைச்சி
- மீன்
- ஈரல்

அதிகளவு இரும்புச் சத்தை எடுத்துக் கொள்ள உதவுகிறது

தவிர்க்க வேண்டியவை

டானின்	பைடேட்ஸ்
1. டீ	1. வாற்கோதுமை
2. காபி	2. பருப்பு வகைகள்
3. திராட்சை	3. கொட்டைகள்

முருங்கைக்கீரையின் சிறப்பு

- முருங்கைக்கீரையில் 46 நோய் எதிர்க்கும் சத்துகள் மற்றும் 300 வகையான நோய்களுக்கு தீர்வுகளும் உள்ளன
- முருங்கைக்கீரை ஜூஸ் 100 மில்லி எலுமிச்சை பழச்சாறு 2 ஸ்பூன் 30 நாட்களுக்குள் இரத்தத்தின் அளவு கூடும்

விளைவுகள்...

சிறுநீரக பிரச்சனை

இருதய நோய்

குறைமாத குழந்தை

மலட்டுத் தன்மை

சமூக நலன் கருதி வெளியிடுவோர்

பிரியங்கா.M

சமூக நலத்துறை முதுகலை இரண்டாம் ஆண்டு மாணவி

DR.PROF. Y.ஜான் சாம் அருண் பிரபு

M.Sc(N),M.Phil,Ph.D.,

சமூக நலத்துறை தலைவர்

சி.எஸ்.ஐ தேவராஜ் அம்பாக்கியம் கல்லூரி பலவன்சல

ஆப் நர்சிங் கன்னியாகுமரி

சோகையுடன் வாழ்வு.... சோகமான முடிவு... வளர் இளம் பெண்ணே எச்சரிக்கை!!

முருங்கைக்கீரையின் மகத்துவம்